Agenda Item Form

Agenda Date: 05/18/04

Districts Affected: 5
Dept. Head/Contact Information: BYRON E. JOHNSON 541-4313

Type of Agenda Item:

☐Resolution	☐Staffing Table Changes	☐Board Appointments
☐Tax Installment Agreements	☐Tax Refunds	☐Donations
☐RFP/ BID/ Best Value Procurement	☐Budget Transfer	☐Item Placed by Citizen
☐Application for Facility Use	☐Bldg. Permits/Inspection	☐Introduction of Ordinance
☐Interlocal Agreements	☐Contract/Lease Agreement	☐Grant Application
☒Other Construction Change Order Increase		

Funding Source:
☐General Fund
☐Grant (duration of funds: _____ Months)
☒Other Source: Airport Genl. Revenue Funds

Legal:

☐ Legal Review Required Attorney Assigned (please scroll down): None ☐ Approved ☐ Denied

Timeline Priority: ☒High ☐Medium ☐Low # of days:_____

Why is this item necessary:
To be able to continue construction of Airport Facility Addition

Explain Costs, including ongoing maintenance and operating expenditures, or Cost Savings:
Please see the attached Change Order Description Changes

Statutory or Citizen Concerns:

_____

Departmental Concerns:

_____

DATE: MAY 12, 2004

TO: Municipal Clerk

FROM: Byron E. Johnson, C.P.M.
Director of Purchasing x 4313

THRU: Aurora Wells
Interim Bid Clerk ext. 4038

Please place the following item on the **CONSENT** agenda for the Council Meeting of **MAY 18, 2004.**

Item should read as follows:

Change Order No. Nine (Construction Change) to C.F. Jordan L.P. for "EPIA Consolidated Security Checkpoint & Terminal Apron project" for an increase amount of $ 67,903.91 An increase in the Contract amount due to.

Item 1: Provide and install additional HVAC unit for room A204 to be used by TSA as security monitoring room (per Proposal Request 12) $ 17,948.87

Item 2: Provide for new power outlets, conduit, boxes, and cabling for cameras to be used by TSA for security monitoring purposes (per Proposal Request 8 and ASI dated 04/15/04) $ 40,173.30

Item 3: Provide for installation of glass wall panels provided by TSA at Security Screening area. $ 3,302.49

Item 4: Provide 24" tall letters to read HOME OF THE SUNBOWL. Letters to be mounted on exterior horizontal tube that conceals sprinkler system (per Proposal Request 11) $ 6,479.25

Contact person: Miguel Rodriguez, Accounting Technician at 541-4424.

****

AGENDA FOR: **May 18, 2004**

****

CITY OF EL PASO PURCHASING
CHANGE ORDER

DATE:	05/12/04	CHANGE ORDER NO.:	09
		☐ SCOPE CHANGE	☑ CONSTRUCTION CHANGE
PROJECT:	EPIA Consolidated Security Checkpoint & Terminal Apron	BID NO.:	2003-129
		DEPT. ID#:	62620031
TO (Contractor):	C. F. Jordan LP	PROJ/GRANT/USER:	G620AIP0019
		FUND:	11508
		ACCOUNT:	508027
		PO NO. :	2003008049

You are directed to make the following changes in this Contract:

Item 1: Provide and install additional HVAC unit for room A204 to be used by TSA as security monitoring room (per Proposal Request 12). ($ 17,948.87)
Item 2: Provide for new power outlets, conduit, boxes, and cabling for cameras to be used by TSA for security monitoring purposes (per Proposal Request 8 and ASI dated 04/15/04). ($ 40,173.30)
Item 3: Provide for installation of glass wall panels provided by TSA at Security Screening Area. ($ 3,302.49)
Item 4: Provide 24" tall letters to read HOME OF THE SUNBOWL. Letters to be mounted on exterior horizontal tube that conceals sprinkler system (per Proposal Request 11). ($ 6,479.25)

CHANGE ORDER AMOUNT : $67,903.91

Original Contract Sum	$4,888,726.79
Net Change by previous Change Orders	$49,195.55
Contract Sum prior to this Change Order	$4,937,922.34
Contract Sum will be **(increased)** (decreased) (unchanged) by this Change Order	$67,903.91
New Contract Sum, including this Change Order	$5,005,826.25
Total Net Value of Change Orders To Date	$117,099.46

Contract Time will be **(increased)** (decreased) (unchanged) BY (20) DAYS*

Net Change Order Percentage (Not to exceed 25%) 2.34%

CITY OF EL PASO	ARCHITECT / ENGINEER	CONTRACTOR
TWO CIVIC CENTER PLAZA EL PASO, TX-79901	MOORE NORDELL KROEGER	C. F. JORDAN LP
CITY COUNCIL ACTION REQ'D: CIRCLE ONE: YES NO DATE APPROVED: _____		
ENGINEERING DEPARTMENT: Irene Ramirez, Interim City Engineer Date: 5/12/04	By: _____ Date: _____	By: _____ Date: _____

* Subject to the terms of the Contract, GENERAL CONDITIONS, SECTION 2.5

CITY OF EL PASO, TEXAS
PURCHASING DEPARTMENT
Contract Compliance Administration

2 Civic Center Plaza, 7th Floor
El Paso, Texas 79901-1196
Tel: (915) 541-4039 Fax: (915) 541-4016

MEMO

TO : Irene Ramirez, City Engineer

FROM : Anthony R. Talamo, AT Administrative Analyst

SUBJECT : Change Orders

DATE : **May 12, 2004**

Attached for your review and approval is the following Change Order:

Project	Change Order No.	Amount	Days	Council Action Req'd
EPIA Consolidated Security Checkpoint& Terminal Apron Bid No. 2003-129	09	$67,903.91	20	Yes

Budget Details

Business Unit	Ledger Group	Account	Fund Code	Department	Project	Budget Period
COFEP	APPROP	508027	11508	62620031	G620AIP0019	2004

Ledger Amounts

Budget:	6,566,021.00	USD
Expense:	2,951,783.61	USD
Encumbrance:	234,503.75	USD
Pre-Encumbrance:	0.00	USD
Associated Revenue:	0.00	USD

Max Rows 100

Attributes

Parent / Children

Associated Budgets

Available Budget

Without Tolerance:	3,379,733.64	USD	**Percent:**	(51.47%) Forecasts
With Tolerance:	3,379,733.64	USD	**Percent:**	(51.47%)

Budget Exceptions

Exception Errors: 0 **Exception Warnings:** 6 Budget Exceptions

Return to Search | Notify

REQUEST FOR CHANGE ORDER

TO: Contract Compliance **DATE:** 5/11/04

FROM: Isela F. Canava **Engineering** **ext.** 4023

RE: Project: EPIA Consolidated Security Checkpoint & Terminal Apron

Bid No: 2003-129

Change Order No: 9

Please Indicate Type: **Construction** ☐ **Scope** ☒

Please Indicate Action to PO: **Increase** ☒ **Decrease** ☐

Change in Contract Time: 20 **Days**

Change Order Amount: $67,903.91

Unforeseen Condition:	___
Value Engineering:	___
Error/Omission:	___
User Request:	$67,903.91
Total	**$** 67,903.91

Justification: Item 1: Provide and install additional HVAC unit for room A204 to be used by TSA as security monitoring room (per Proposal Request 12). ($17,948.87)

Item 2: Provide for new power outlets, conduit, boxes, and cabling for cameras to be used by TSA for security monitoring purposes (per Proposal Request 8 and ASI dated 4.15.04). ($40,173.30)

Item 3: Provide for installation of glass wall panels provided by TSA at Security Screening Area. ($3,302.49)

Item 4: Provide 24" tall letters to read HOME OF THE SUNBOWL . Letters to be mounted on exterior horizontal tube that conceals sprinkler system (per Proposal Request 11). ($6,479.25)

Attachments: **Problem/Solution Rationalization**
Contractor's Cost Proposal

RECEIVED
MAY 12 2004
CITY OF EL PASO
CONTRACT COMPLIANCE

CHANGE ORDER REQUEST NO. 9

PROJECT NAME: EPIA CONSOLIDATED SECURITY CHECKPOINT & TERMINAL APRON
CONTRACTOR: C.F. JORDAN L.P.
BID NO: 2003-129

ITEM 1: PROVIDE AND INSTALL ADDITIONAL HVAC UNIT FOR ROOM A204 TO BE USED BY TSA AS SECURITY MONITORING ROOM (PER PROPOSAL REQUEST 12).

PROBLEM: The local Transportation Security Agency received a federal mandate on security modifications needed to include monitoring requirements after the project was bid. Please see attached memorandum from El Paso International Airport.

SOLUTION: Provide for HVAC unit for room A204.

COST: $17,948.87

CHANGE ORDER TYPE: Scope

ITEM 2: PROVIDE FOR NEW POWER OUTLETS, CONDUIT, BOXES, AND CABLING FOR CAMERAS TO BE USED BY TSA FOR SECURITY MONITORING PURPOSES (PER PROPOSAL REQUEST 8 AND ASI DATED 4/15/04).

PROBLEM: The local Transportation Security Agency received a federal mandate on security modifications needed to include monitoring requirements after the project was bid. Please see attached memorandum from El Paso International Airport.

SOLUTION: Provide for new power outlets, conduit and cabling for cameras to be provided by TSA as needed to meet federal mandate.

COST: $40,173.30

CHANGE ORDER TYPE: Scope

ITEM 3: PROVIDE FOR ASSEMBLY AND INSTALLATION OF GLASS WALL PANELS PROVIDED BY TSA AT SECURITY SCREENING AREA.

PROBLEM: The local Transportation Security Agency received a federal mandate on security modifications needed to include setup of security checkpoints. Glass panels need to be installed between checkpoints to meet federal mandate. Please see attached memorandum from El Paso International Airport.

SOLUTION: Provide for assembly and installation of glass wall panels for security checkpoints. Glass wall panels to be provide by TSA.

COST: $3,302.49

CHANGE ORDER TYPE: Scope

ITEM 4: PROVIDE FOR 24" TALL LETTERS TO READ "HOME OF THE SUNBOWL." LETTERS TO BE MOUNTED ON EXTERIOR HORIZONTAL TUBE THAT CONCEALS SPRINKLER SYSTEM (PER PROPOSAL REQUEST 11).

PROBLEM: Department of Aviation has requested the installation of this lettering to show the significance the Sun Bowl has to El Paso. Please see attached memorandum from El Paso International Airport.

SOLUTION: Provide for letters and installation of letters to read "Home of the Sunbowl."

COST: $6,479.25

CHANGE ORDER TYPE: Scope

Net Total: $67,903.91

El Paso
International Airport

MEMORANDUM

TO: Irene Ramirez
Interim City Engineer

FROM: Patrick T. Abeln, A.A.E.
Director of Aviation

SUBJECT: Consolidated Security Checkpoint
Change Orders

DATE: May 11, 2004

The following scope change orders are necessary in order to properly complete the Consolidated Security Checkpoint project:

- HVAC for TSA room A204 $17,948.87
- Conduit and Wiring for TSA cameras $40,173.30
- TSA glass wall panels erection $3,302.49
- "Home of the Sun Bowl" exterior signage $6,479.25

The first three change orders are all related to required security modifications. The local Transportation Security Administration (TSA) agency received notification from Washington regarding the setup of the checkpoints, additional cameras and related electrical and cabling requirements, after the final design and bidding of the project was complete. These changes are federally mandated and must be incorporated into the project.

The "Home of the Sun Bowl" signage will be located on the exterior of the addition. The Sun Bowl is a major local, community event, and the Department of Aviation would like to restore the historical significance of this event by exhibiting this signage, just as it was once displayed on the Airport terminal in the 1950's.

Please call Monica Lombraña at 780-4793 should you require additional information regarding this request.

C.F. Jordan, L.P.

CHANGE ORDER REQUEST
No. 00029

7700 C.F. Jordan Drive
El Paso, TX 79912

Phone: (915) 877-3333
Fax: (915) 877-3999

TITLE: Owner Change Order Request #29 REV

DATE: 4/15/2004

PROJECT: EPIA Security Checkpoint & Terminal

JOB: I03018

TO: Attn: Isela F. Canava
CITY OF EL PASO
2 CIVIC CENTER PLAZA
Purchasing Department
El Paso, Texas 79901-1196
Phone: 915-541-4203 Fax: 915-541-4441

CONTRACT NO:

RE: **To:** **From:** **Number:**

DESCRIPTION OF PROPOSAL

For Moore Nordell Kroeger Proposal Request #0012 revised 05-06-04

Item	Description	Quantity	Units	Unit Price	Tax Rate	Tax Amt	Net Amt
1.01	Provide and install additional HVAC unit for room A204 as indicated on Attachments PR.12.1 through PR.12.5	1.000	LS	$17,948.87	0.00%	$0.00	$17,948.87
1.02	We are requesting 10 additional days be added to the contract time.	1.000	LS	$0.00	0.00%	$0.00	$0.00

Unit Cost:	**$17,948.87**
Unit Tax:	**$0.00**
Lump Sum:	**$0.00**
Lump Tax:	**$0.00**
Total:	**$17,948.87**

CITY CLERK DEPARTMENT
2004 MAY 10 PM 1 30

APPROVAL:

By: Jim Carpenter
Jim Carpenter

Date: 5.06.04

By: _____
Isela F. Canava

Date: _____

Expedition®

STANDARD ESTIMATE REPORT
EPIA SECURITY CHECKPOINT

I03018

MNK PROPOSAL REQUEST # 00012 DATED 3.15.04

ITEM	DESCRIPTION	TAKEOFF	QTY	AMOUNT	TOTAL AMT
1100.00	**GENERAL REQUIREMENTS**				
1101.00	SUPERINTENDENT	0	HRS	$ -	$ -
1141.00	PROJECT MANAGER	0	HRS	$ -	$ -
1142.00	ESTIMATING & SCHEDULING	0	HRS	$ -	$ -
1-12100	FOREMAN	0	HRS	$ 15.00	$ -
1-70100	LAYOUT	0	HRS	$ 14.00	$ -
1-70100	LAYOUT HELPER	0	HRS	$ 12.00	$ -
1705.00	CLEANUP - CURRENT	0	HRS	$ -	$ -
1706.00	CLEANUP - RENT DUMPSTER	0	HRS	$ -	$ -
1711.00	CLEANUP - FINAL	0		$ -	$ -
1725.00	PUNCHLIST, ETC	0		$ -	$ -
1761.00	ALLOWANCES	0		$ -	$ -
	GENERAL REQUIREMENTS			$ -	$ -
16-00000	**ELECTRICAL**				
16-00100	**ELECTRICAL**				
SUB	ADD LIEBERT A/C UNIT	1	LSUM	$ 15,560.25	$ 15,560.25
	ELECTRICAL			**$ 15,560.25**	**$ 15,560.25**
SUB		1	LSUM		$ -
				$ -	$ -

STANDARD ESTIMATE REPORT
EPIA SECURITY CHECKPOINT

I03018

MNK PROPOSAL REQUEST # 00012 DATED 3.15.04

ESTIMATE TOTALS

LABOR	$	-	
SUBCONTRACT	$	15,560.25	
	$	**15,560.25**	
CONTINGENCY			
UMBRELLA INSURANCE			0.070
BUILDERS RISK INSURANCE	$	13.23	0.00085
GENERAL LIABILITY INS CONC			6.750
PAYROLL TAXES & INS ON LABOR			38.000
SUPERVISION P.T. & I.			32.000
BUILDERS PERMITS, ETC.			
GENERAL LIABILITY SUPERVISION			12.880
GENERAL LIABILITY SUBCONTRACTS	$	34.23	0.0022
SALES TAX			
CORP G & A			
BOND ADJUSTMENT			
SUBTOTAL	$	15,607.71	
FEE	$	2,341.16	15.00%
TOTAL	**$**	**17,948.87**	

EPIA Security Checkpoint HVAC
TSA Computer Room

	Material	Labor
Liebert Split System	$ 8,700.00	$ 398.00
Refrig Lines W/ Insulation 60'	$ 966.00	$ 378.00
Condensate line	$ 342.00	$ 216.00
Redwood support	$ 12.00	$ 9.25
Electrical	$ 3,259.00	$ 1,280.00
Total	$ 13,279.00	$ 2,281.25
Grand total	$ 15,560.25	

7170 WESTWIND DR
SUITE 107
EL PASO, TEXAS
79912-1726

May 7, 2004

Isela Canava
City of El Paso
#2 Civic Center Plaza, City Hall
4th Floor
El Paso, TX 79901

MOORE NORDELL KROEGER ARCHITECTS

Dear Isela:

I have reviewed C.F. Jordan's latest proposal which is in response to Proposal Request #8 to provide raceways, cabling and additional outlets to provide the infrastructure required by TSA for their surveillance system. As you are aware, this proposal was extensively examined and re-negotiated. I now believe that the contractor has a more complete understanding of the scope of work and that the attached revised proposal price is appropriate.

I recommend that the City issue a change order for the amount requested.

Sincerely,

MOORE NORDELL KROEGER ARCHITECTS, INC.

Rodney Kroeger, AIA
Vice President

Attachment

cc: Monica Lombrana, El Paso International Airport
Pat Abeln, El Paso International Airport
Jim Carpenter, C.F. Jordan
Hector Olave, C.F. Jordan

915-587-8023
FAX 915-587-0985

P:\01023\UrbSecurity\01023LTR0054.doc

C.F. Jordan, L.P.

7700 C.F. Jordan Drive
El Paso, TX 79912

Phone: (915) 877-3333
Fax: (915) 877-3999

CHANGE ORDER REQUEST
No. 00030

TITLE: Owner Change Order Request #30 REV

DATE: 4/20/2004

PROJECT: EPIA Security Checkpoint & Terminal

JOB: I03018

TO: Attn: Isela F. Canava
CITY OF EL PASO
2 CIVIC CENTER PLAZA
Purchasing Department
El Paso, Texas 79901-1196
Phone: 915-541-4203 Fax: 915-541-4441

CONTRACT NO:

RE: **To:** **From:** **Number:**

DESCRIPTION OF PROPOSAL

For Moore Nordell Kroeger Proposal Request #0008 (Revised 05-06-04)

Item	Description	Quantity	Units	Unit Price	Tax Rate	Tax Amt	Net Amt
1.01	For the installation of new power outlets, conduit, boxes and cabling for new cameras as shown on drawing attachment PR #8.1 and revised as per MNK's Supplemental Information dated April 15, 2004.	1.000	LS	$40,173.30	0.00%	$0.00	$40,173.30
1.02	We are requesting an additional 15 days be added to the contract time.	1.000	LS	$0.00	0.00%	$0.00	$0.00

Unit Cost:	**$40,173.30**
Unit Tax:	**$0.00**
Lump Sum:	**$0.00**
Lump Tax:	**$0.00**
Total:	**$40,173.30**

APPROVAL:

By: Jim Carpenter
Jim Carpenter

Date: 5.06.04

By: _____
Isela F. Canava

Date: _____

STANDARD ESTIMATE REPORT
EPIA SECURITY CHECKPOINT

I03018

MNK PROPOSAL REQUEST # 0008 DATED 1.08.04

ITEM	DESCRIPTION	TAKEOFF	QTY	AMOUNT	TOTAL AMT
1100.00	**GENERAL REQUIREMENTS**				
1101.00	SUPERINTENDENT	0	HRS	$ -	$ -
1141.00	PROJECT MANAGER	0	HRS	$ -	$ -
1142.00	ESTIMATING & SCHEDULING	0	HRS	$ -	$ -
1-12100	FOREMAN	2	HRS	$ 15.00	$ 30.00
1-70100	LAYOUT	16	HRS	$ 14.00	$ 224.00
1-70100	LAYOUT HELPER	16	HRS	$ 12.00	$ 192.00
1705.00	CLEANUP - CURRENT	0	HRS	$ -	$ -
1706.00	CLEANUP - RENT DUMPSTER	0	HRS	$ -	$ -
1711.00	CLEANUP - FINAL	0		$ -	$ -
1725.00	PUNCHLIST, ETC	0		$ -	$ -
1761.00	ALLOWANCES	0		$ -	$ -
	GENERAL REQUIREMENTS			**$ -**	**$ 446.00**
16-00000	**ELECTRICAL**				
16-00100	ELECTRICAL				
SUB	ADD CABLING & CONNEC	1	LSUM	$ 34,382.44	$ 34,382.44
	ELECTRICAL			**$ 34,382.44**	**$ 34,382.44**

STANDARD ESTIMATE REPORT
EPIA SECURITY CHECKPOINT

I03018

MNK PROPOSAL REQUEST # 0008 DATED 1.08.04

ESTIMATE TOTALS

LABOR	$	446.00	
SUBCONTRACT	$	34,382.44	
	$	**34,828.44**	
CONTINGENCY			
UMBRELLA INSURANCE			0.070
BUILDERS RISK INSURANCE	$	29.23	0.00085
GENERAL LIABILITY INS CONC			6.750
PAYROLL TAXES & INS ON LABOR			38.000
SUPERVISION P.T. & I.			32.000
BUILDERS PERMITS, ETC.			
GENERAL LIABILITY SUPERVISION			12.880
GENERAL LIABILITY SUBCONTRACTS	$	75.64	0.0022
SALES TAX			
CORP G & A			
BOND ADJUSTMENT			
SUBTOTAL	$	34,933.31	
FEE	$	5,240.00	15.00%
TOTAL	**$**	**40,173.30**	

EPIA PR #8 Revised

Material	Labor Hours	Labor
$5,492.67	415.5	$13,296.00

Sub Total

$18,798.67

Sub Contract

$15,593.77

Total

$34,382.44

PR # 8			Est. By:				
			1 of 2				

Material	Count	Material	Per	Labor	Per			
3/4" EMT	3500	$ 0.57	E	0.05	E			
3/4" EMT Connectors	450	$ 0.59	E	0.05	E			
3/4" EMT Couplings	350	$ 0.59	E	0.05	E			
3/4" Caddy pipe support	438	$ 0.89	E	0.05	E			
Minerialac strap 3/4	110	$ 0.57	E	0.05	E			
Hole Drill & Patch	45	$ 20.00	E	0.80	E			
Fender Washers 1.5x1/4	450	$ 0.21	E	0.01	E			
1/4/20 Tapin anchor	450	$ 0.29	E	0.05	E			
T-Bar Box Support	40	$ 4.25	E	0.05	E			
1/4x4" Toggle bolt	50	$ 0.33	E	0.12	E			
Trapeze assembly	113	$ 1.75	E	0.10	E			
4"sq 2.1/8D box	110	$ 1.00	E	0.12	E			
4"sq x5/8 device cover	60	$ 0.75	E	0.10	E			
4"sq Blank cover	50	$ 0.60	E	0.05	E			
Duplex receptcale	20	$ 8.15	E	0.18	E			
Duplex cover plate	20	$ 1.27	E	0.05	E			
Pull line	3000	$ 0.07	E	0.01	E			
#12 THHN	2200	$ 0.12	E	0.01	E			
Wire nuts Yellow	150	$ 0.11	E	0.03	E			
Misc. Consumables	4	$ 50.00	E	2.00	E			
			E	0.00	E			
		$ 5,492.67	T	415.50	T			

MOORE NORDELL KROEGER
ARCHITECTS

TRANSMITTAL LETTER

PROJECT:	01023	**TRANSMITTAL#:**	0147
DATE:	1.8.04	**SENT VIA:**	☐ US MAIL ☒ HAND CARRIED ☐ OVERNIGHT ☐ OTHER

TO: City of El Paso
#2 Civic Center Plaza, City Hall
4th Floor
El Paso, TX 79901

If enclosures are not as noted, please inform us immediately.
If checked below, please:

☒ Acknowledge receipt of enclosure

☐ Return enclosures to us

ATTN: Isela Canava

ACTION TAKEN: ☒Approved ☐Disapproved

WE TRANSMIT: ☒Herewith ☐Under separate cover via _____ ☐In accordance with your request _____

FOR YOUR: ☐Approval ☐Distribution to parties ☐Information ☐review & comment ☐Record ☒Use ☐Other _____

THE FOLLOWING: ☒Drawings ☐Shop Drawing Prints ☐Samples ☐Specifications ☐Contract ☐Diskettes ☐Change Order ☐Pay Request ☐Other

Copies:	Description:
1	**Proposal Request #8**

COPIES TO: MNK Files
EPIA: Monica Lombrana
C.F. Jordan: Hector Olave

BY: Steve Dominguez

Rcvd 1/9/04

7170 Westwind Dr., Ste. 105, El Paso, TX 79912-1726
(915)587-8023 FAX(915)587-0985

MOORE NORDELL KROEGER
ARCHITECTS

PROPOSAL REQUEST

PROJECT	01023	**PROPOSAL REQUEST #:**	0008
OWNER:	City of El Paso #2 Civic Center Plaza, City Hall 4th Floor El Paso, TX 79901	**DATE:**	1.8.04
TO (Contractor):	C.F. Jordan	**CONTRACT DATED:**	
ATTN:	Hector Olave		
CONTRACT FOR:	EPIA - Consolidated Security Checkpoint		

Please submit an itemized quotation for changes in the Contract Sum and/or Time incidental to proposed modifications to the Contact Documents described herein.

THIS IS NOT A CHANGE ORDER NOR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED HEREIN.

DESCRIPTION: (Written description of the Work)

1. Provide cabling and connection of additional cameras, data and telephone outlets as shown on the attached layout from the Transportation Security Administration (See Attachment PR8.1).

2. Provide additional electrical connections as shown on the attached layout from the Transportation Security Administration (See Attachment PR8.1).

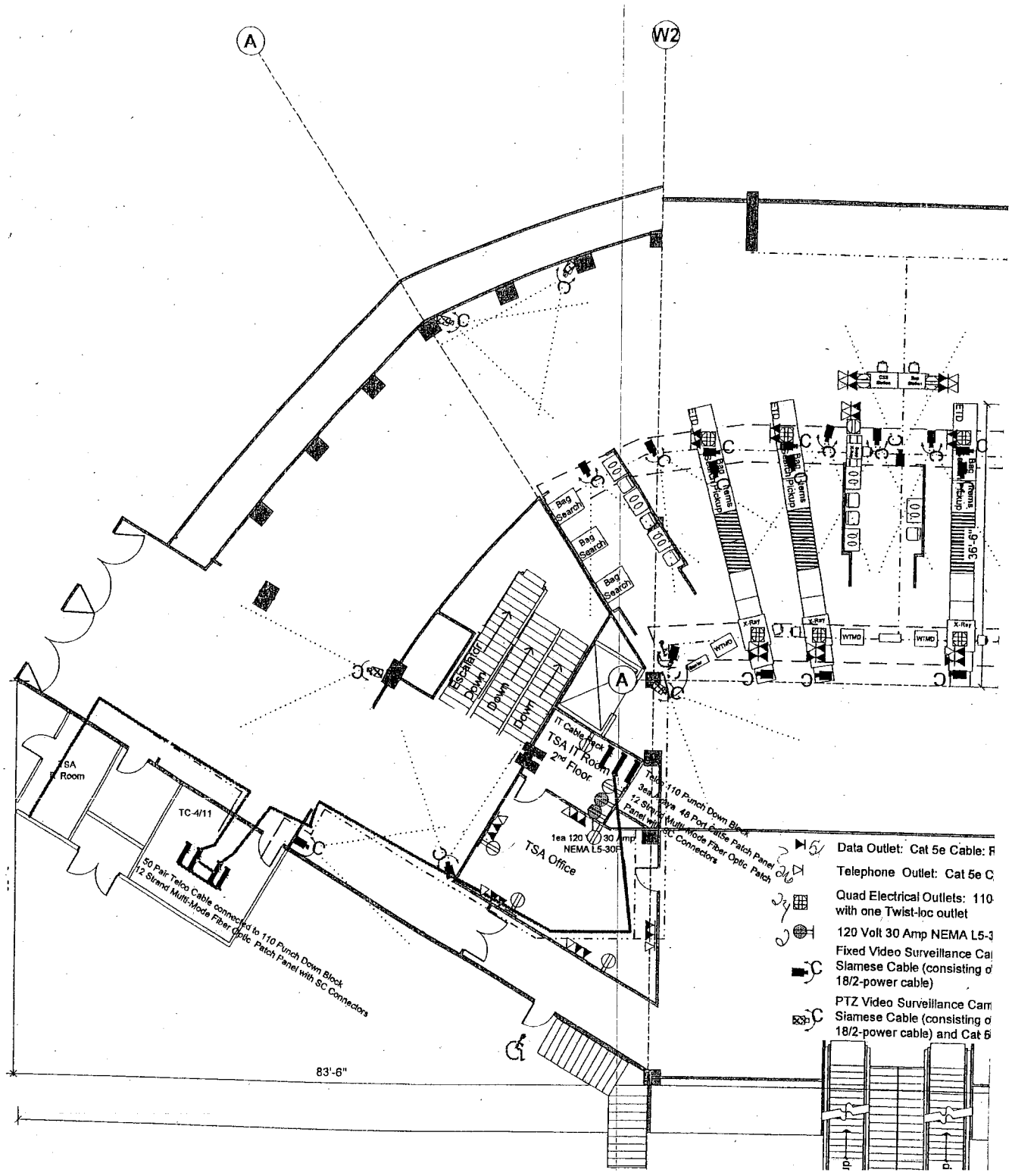
ATTACHMENTS:

11" x 17" Attachment PR8.1

ARCHITECT: Moore Nordell Kroeger Architects, Inc.

BY: **Steve Dominguez**

7170 Westwind, Suite 105, El Paso, TX 79912
(915)587-8023 FAX(915)587-0985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Bag Claims Pickup
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X-Ray
WTMD
WTMD
WTMD
ETD
Escalator Down
Escalator Down
Down
IT Cable Rack
TSA IT Room
2nd Floor
TSA IT Room
TC-4/11
TSA Office
1ea 120 Volt 30 Amp NEMA L5-30R
50 Pair Telco Cable connected to 110 Punch Down Block 12 Strand Multi-Mode Fiber Optic Patch Panel with SC Connectors
110 Punch Down Block
48 Port Cat5e Patch Panel
12 Strand Multi-Mode Fiber Optic Patch Panel with SC Connectors
83'-6"
Data Outlet: Cat 5e Cable: R
Telephone Outlet: Cat 5e C
Quad Electrical Outlets: 110
with one Twist-loc outlet
120 Volt 30 Amp NEMA L5-3
Fixed Video Surveillance Cal
Siamese Cable (consisting o
18/2-power cable)
PTZ Video Surveillance Cam
Siamese Cable (consisting o
18/2-power cable) and Cat 5

MOORE
NORDELL
KROEGER
ARCHITECTS

FAX TRANSMITTAL

DATE:	4/15/2004	**FAX TRANSMITTAL:**	0187
TO:	C.F. Jordan 7700 C.F. Jordan Drive El Paso, TX 79912	**FAX#:** **PHONE:**	(915)877-3999 (915)877-3333
ATTN:	James E Carpenter		
PROJECT:	0123 - EPIA Security		
RE:	Supplemental Information for Proposal Request No. 8		
COVER MESSAGE:			

FROM: Rodney Kroeger, AIA

COPIES TO: Isela Canava (915)541-4441, Monica Lombrana (915)779-5452, Pat Abeln (915)779-5452, Hector Olave (915)778-2921

3 Page(s) being sent (including Fax Coversheet). If you have not received all of the page(s), please call our office at (915) 587-8023. Thank You!

Transmitted By: Andrea Hofacre

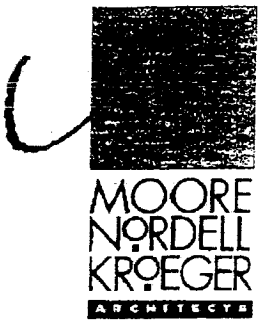
7170 Westwind Dr., Ste. 105, El Paso, TX 79912-1726
(915)587-8023 FAX(915)587-0985

7170 Westwind Dr.
Suite 105
El Paso, Texas
79912-1726

April 15, 2004

James E Carpenter
C.F. Jordan
7700 C.F. Jordan Drive
El Paso, TX 79912

RE: Supplemental Information for Proposal Request No. 8



Dear Jim:

I want to thank you and your sub-contractor for taking the time to meet with me to review your cost proposal which is in response to MNK's Proposal Request No. 8. I believe the clarifications resulting from the meeting will produce significant cost savings to our mutual client.

I would like to take this opportunity to recap these clarifications to ensure that we all have a common understanding so that we can quickly resolve these negotiations.

1) ~~Rigid conduit is not required. EMT will be sufficient.~~
2) Additional "poke-through" devices will not be required as there is a sufficient quantity in the original project scope to achieve TSA's requirements. Unused "poke-through" devices are to be turned over to the Owner.
3) Additional circuits and raceways are not required for 110V power to poke-through devices as there are 28 circuits terminating at junction boxes for this purpose already in the contract documents. Power and data connection to poke-throughs are also in the contract documents.
4) Cameras shown to be mounted to the walls and ceiling in the proposal request attachment drawings are to have their cabling run through conduit. However, the camera cabling which runs up through the 2nd floor "poke-through" devices can be run through the cable trays which are already in the contract documents.
5) Electrical contractor is to provide breakdown for sub-contractor cost proposal.

Additionally, I would appreciate it if you could clarify what THHN-SOL-CU is (next to last line item of electrician's breakdown). I believe this is a designation for electrical power copper wiring but I'm not certain. If it is, I don't believe the quantity is correct.

915-587-8023
FAX 915-587-0985

I look forward to receiving your revised proposal. If you have any questions, please do not hesitate to call me.

Sincerely,

MOORE NORDELL KROEGER ARCHITECTS, INC.

Rod Kroeger, AIA
Vice President

cc: Isela Canava, City of El Paso
Monica Lombrana, El Paso International Airport
Pat Abeln, El Paso International Airport
Hector Olave, C.F. Jordan

7170 WESTWIND DR.
SUITE 105
EL PASO, TEXAS
79912-1726

May 11, 2004

Isela Canava
City of El Paso
#2 Civic Center Plaza, City Hall
4th Floor
El Paso, TX 79901

MOORE NORDELL KROEGER ARCHITECTS

Dear Isela:

I have reviewed C.F. Jordan's cost proposal prepared in response to MNK's Proposal Request #14. This request was for installation of glass walls at the passenger screening area as required by the Transportation Security Administration. The cost proposal by the contractor appears reasonable and I recommend that the City issue a change order for the amount requested.

If you have any questions please feel free to call me.

Sincerely,

MOORE NORDELL KROEGER ARCHITECTS, INC.

Rodney Kroeger, AIA
Vice President

Attachment

cc: Monica Lombrana, El Paso International Airport
Pat Abeln, El Paso International Airport
Jim Carpenter, C.F. Jordan
Hector Olave, C.F. Jordan

915-587-8023
FAX 915-587-0985

P:\01023\LrbSecurity\01023LTRB0056.doc

C.F. Jordan, L.P.

7700 C.F. Jordan Drive
El Paso, TX 79912

Phone: (915) 877-3333
Fax: (915) 877-3999

CHANGE ORDER REQUEST
No. 00032

TITLE: Owner Change Order Request #32

DATE: 5/10/2004

PROJECT: EPIA Security Checkpoint & Terminal

JOB: I03018

TO: Attn: Isela F. Canava
CITY OF EL PASO
2 CIVIC CENTER PLAZA
Purchasing Department
El Paso, Texas 79901-1196
Phone: 915-541-4203 Fax: 915-541-4441

CONTRACT NO:

RE: **To:** **From:** **Number:**

DESCRIPTION OF PROPOSAL

For Moore Nordell Kroeger Proposal Request #00014

Item	Description	Quantity	Units	Unit Price	Tax Rate	Tax Amt	Net Amt
1.01	Install glass wall panels at Security Screening Area. Wall panels are to be provided by TSA. Contractor is to confirm layout and installation requirements with TSA prior to installation. See attachment PR14.1 for wall panel layout.	1.000	LS	$3,302.49	0.00%	$0.00	$3,302.49
1.02	We are requesting three days be added to the contract time.	1.000	LS	$0.00	0.00%	$0.00	$0.00

Unit Cost:	**$3,302.49**
Unit Tax:	**$0.00**
Lump Sum:	**$0.00**
Lump Tax:	**$0.00**
Total:	**$3,302.49**

APPROVAL:

By: Jim Carpenter
Jim Carpenter

Date: 5-10-04

By: _____
Isela F. Canava

Date: _____

STANDARD ESTIMATE REPORT
EPIA SECURITY CHECKPOINT

I03018

MNK PROPOSAL REQUEST # 00014 DATED 4.22.04

ITEM	DESCRIPTION	TAKEOFF	QTY	AMOUNT	TOTAL AMT
1100.00	**GENERAL REQUIREMENTS**				
1101.00	SUPERINTENDENT	0	HRS	$ -	$ -
1141.00	PROJECT MANAGER	0	HRS	$ -	$ -
1142.00	ESTIMATING & SCHEDULING	0	HRS	$ -	$ -
	FOREMAN	8	HRS	$ 15.00	$ 120.00
1705.00	CLEANUP - CURRENT	0	HRS	$ -	$ -
1706.00	CLEANUP - RENT DUMPSTER	0	HRS	$ -	$ -
1711.00	CLEANUP - FINAL	0		$ -	$ -
1725.00	PUNCHLIST, ETC	0		$ -	$ -
1761.00	LABORER	8		$ 12.00	$ 96.00
	GENERAL REQUIREMENTS			**$ -**	**$ 216.00**
8000	**DOORS & WINDOWS**				
8-92001-3	**ALUM WINDOW WALLS**				
SUB	INSTALL EPIA FURNISHED GLASS WALLS	1	LSUM	$ 2,647.00	$ 2,647.00
	DOORS & WINDOWS			**$ 2,647.00**	**$ 2,647.00**
		1	LSUM		
		1	LSUM		

STANDARD ESTIMATE REPORT
EPIA SECURITY CHECKPOINT

I03018

MNK PROPOSAL REQUEST # 00014 DATED 4.22.04

ESTIMATE TOTALS

LABOR	$	216.00	
SUBCONTRACT	$	2,647.00	
	$	**2,863.00**	
CONTINGENCY			
UMBRELLA INSURANCE			0.070
BUILDERS RISK INSURANCE	$	2.43	0.00085
GENERAL LIABILITY INS CONC			6.750
PAYROLL TAXES & INS ON LABOR			38.000
SUPERVISION P.T. & I.			32.000
BUILDERS PERMITS, ETC.			
GENERAL LIABILITY SUPERVISION			12.880
GENERAL LIABILITY SUBCONTRACTS	$	6.30	0.00220
SALES TAX			
CORP G & A			
BOND ADJUSTMENT			
SUBTOTAL	$	2,871.73	
FEE	$	430.76	15.00%
TOTAL	**$**	**3,302.49**	

GLASS HOUSE

May 7, 2004
C F JORDAN, L.P.
7700 C F JORDAN DR.
EL PASO, TEXAS 79912
ATTN: JIM CARPENTER
RE: EPIA CONSOLIDATED SECURITY CHECKPOINT

GENTLEMEN:
We make the following proposal
FURNISH LABOR AND FASTENERS
FURNISH FLOOR FASTENERS AND LABOR ONLY TO INSTALL OWNER FURNISHED NON-METALLIC BARRIERS AND GATES.
INCLUDED:
ALL LABOR, FLOOR FASTENERS AND EQUIPMENT REQUIRED FOR A COMPLETE INSTALLATION OF THIS SCOPE OF WORK.
EXCLUDED:
ALL NON- METALLIC BARRIER FRAMES, PANELS, GATES, GATE HARDWARE, CORNER CONNECTIONS, FLOOR ANCHOR PLATES, ETC. REQUIRED TO ASSEMBLE OR MAKE OPERATIONAL OWNER FURNISHED ITEMS. PROTECTION OF MATERIALS IN PLACE, SALES TAX, FINAL CLEANING AND ANY OTHER OWNER/CONTRATOR REQUIREMENTS THAT ARE NOT SPECIFICALLY LISTED ABOVE.
QUALIFICATIONS:
PLEASE ALLOW TWO (2) TO THREE (3) WEEKS FOR MOBILIZATION AND INSTALLATION AFTER RECEIPT OF SIGNED PROPOSAL. THIS PRICE IS GOOD FOR SIXTY (60) DAYS FROM THIS DATE.

BASE BID **$ 2,647.00**

Proposal by:

The Glass House, Inc.

Signature

Thomas M. Meece President

Date: 5/7/04

Accepted by:

Company

Signature

Name Title

Date:

Glass House, Inc.
11 Rojas
Paso, Texas 79935
915) 592-5583 (TEL)
915) 592-5770 (FAX)

MOORE NORDELL KROEGER
ARCHITECTS

PROPOSAL REQUEST

PROJECT	EPIA - Security Checkpoint	**PROPOSAL REQUEST #:**	00014
OWNER:	City of El Paso	**DATE:**	4.22.04
TO (Contractor):	C.F. Jordan	**CONTRACT DATED:**	
ATTN:	Hector Olave		
CONTRACT FOR:			

Please submit an itemized quotation for changes in the Contract Sum and/or Time incidental to proposed modifications to the Contract Documents described herein.

THIS IS NOT A CHANGE ORDER NOR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED HEREIN.

DESCRIPTION: (Written description of the Work)

Install glass wall panels @ Security Screening Area. Wall panels are to be provided by TSA. Contractor is to confirm layout and installation requirements with TSA prior to Installation. See Attachment PR14.1 for wall panel layout.

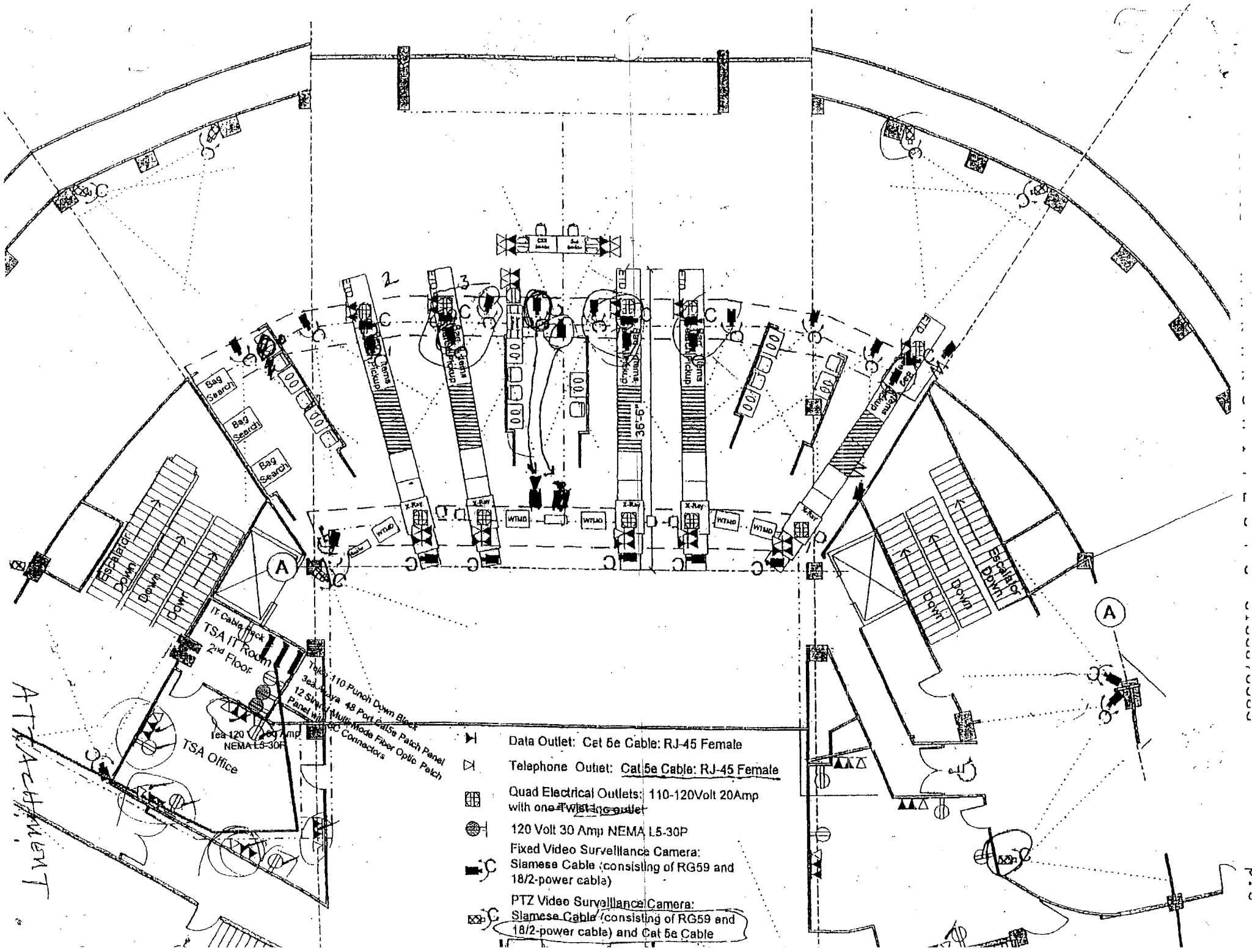
ATTACHMENTS:

8 ½" x 11" PR14.1

ARCHITECT: Moore Nordell Kroeger Architects, Inc.

BY: Steve Dominguez

7170 Westwind, Suite 105, El Paso, TX 79912
(915)587-8023 FAX(915)587-0985

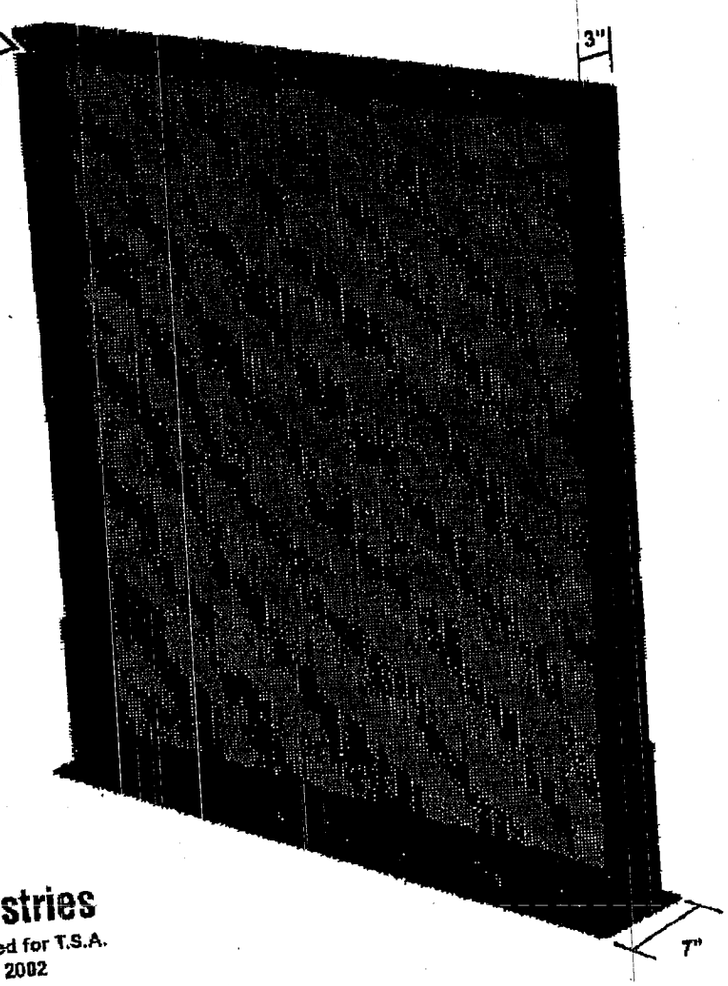

Bag Search
Bag Search
Bag Search
Items Pickup
Items Pickup
Items Pickup
Items Pickup
36'-6"
X-Ray
X-Ray
X-Ray
X-Ray
WTMD
WTMD
WTMD
WTMD
Escalator Down
Down
Down
Escalator Down
Down
Down
A
A
IT Cable Rack
TSA IT Room
2nd Floor
Type 110 Punch Down Block
3ea 24 Port Cat5e Patch Panel
12 SM & Multi-Mode Fiber Optic Patch Panel with SC Connectors
1ea 120 Volt 20A Amp NEMA L5-30P
TSA Office
ATTACHMENT
Data Outlet: Cat 5e Cable: RJ-45 Female
Telephone Outlet: Cat 5e Cable: RJ-45 Female
Quad Electrical Outlets: 110-120Volt 20Amp with one Twist-lock outlet
120 Volt 30 Amp NEMA L5-30P
Fixed Video Surveillance Camera: Siamese Cable (consisting of RG59 and 18/2-power cable)
PTZ Video Surveillance Camera: Siamese Cable (consisting of RG59 and 18/2-power cable) and Cat 5e Cable

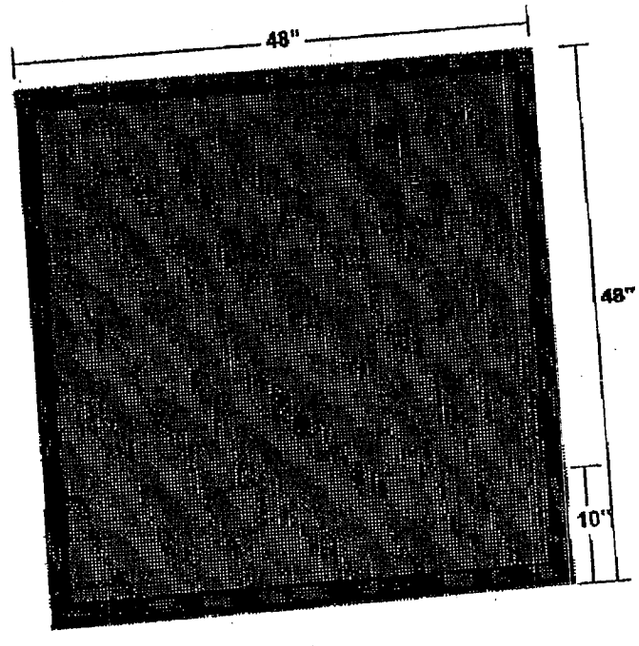
CARRIE:

PLEASE TWO. TO JIM & INCLUDE THIS INTO PROPOSAL REQUEST # 14 (INSTRUCTIONS) AND MAKE SURE THE PKG IS FAX TO GLASS HOUSE.

PS. PLEASE E-MAIL ME A BLANK FAX COVER PAGE.

80-5000/4
Non-Metallic Barrier,
48" high with Clear Panel, 48" wide



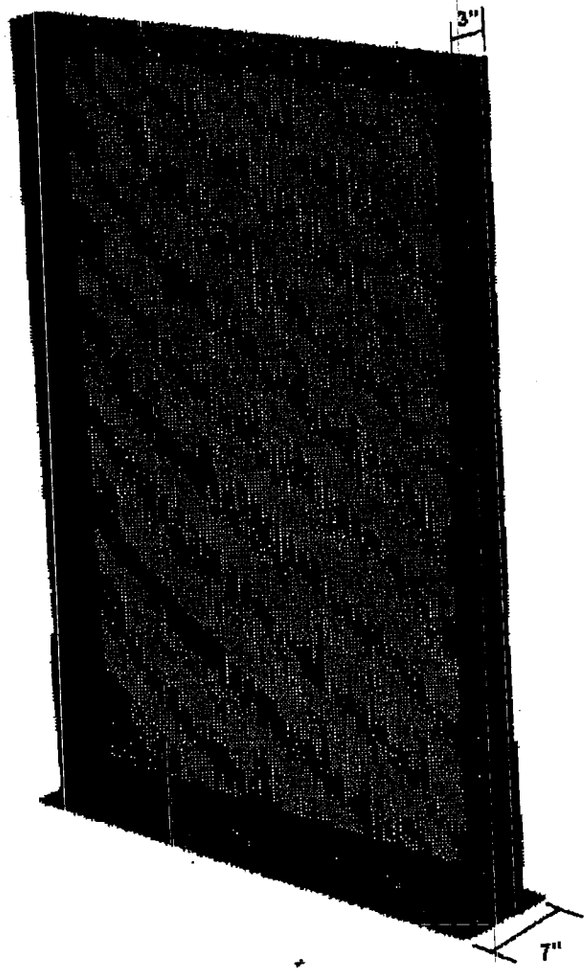


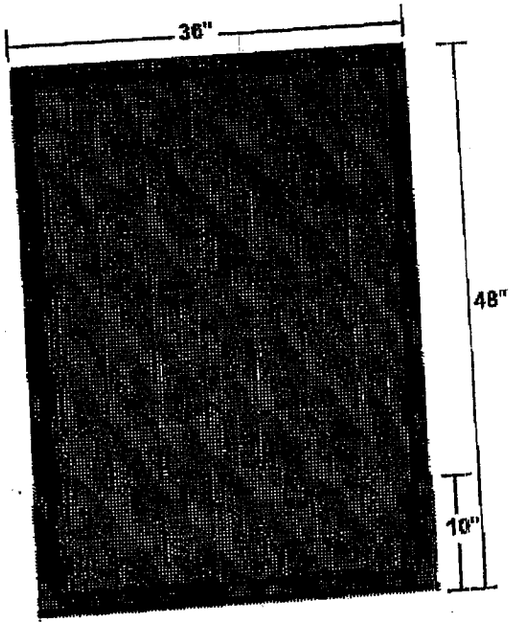
Lavi Industries

Concepts Prepared for T.S.A.

Approval: _____

80-5000/3
Non-Metallic Barrier,
48" high with Clear Panel, 36" wide



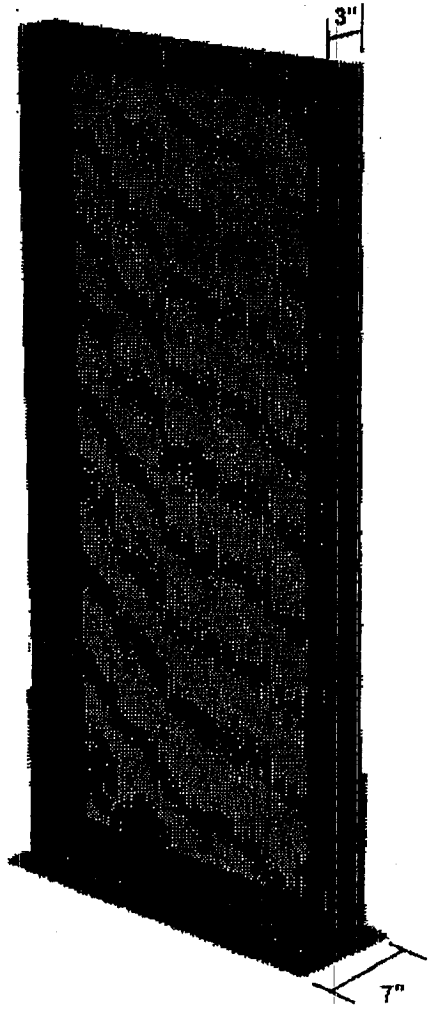


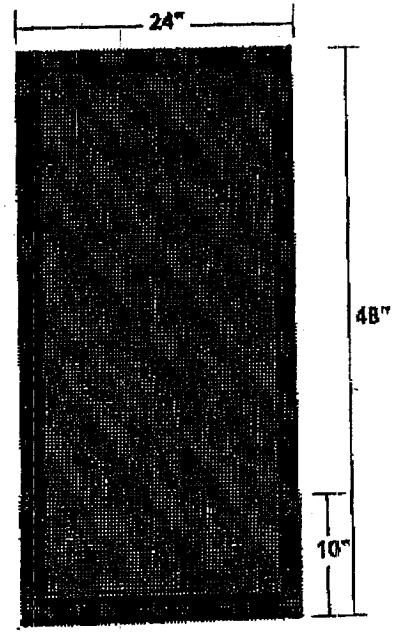
Lavi Industries

Concepts Prepared for T.S.A.

Approval: _____

80-5000/2
Non-Metallic Barrier,
48" high with Clear Panel, 24" wide



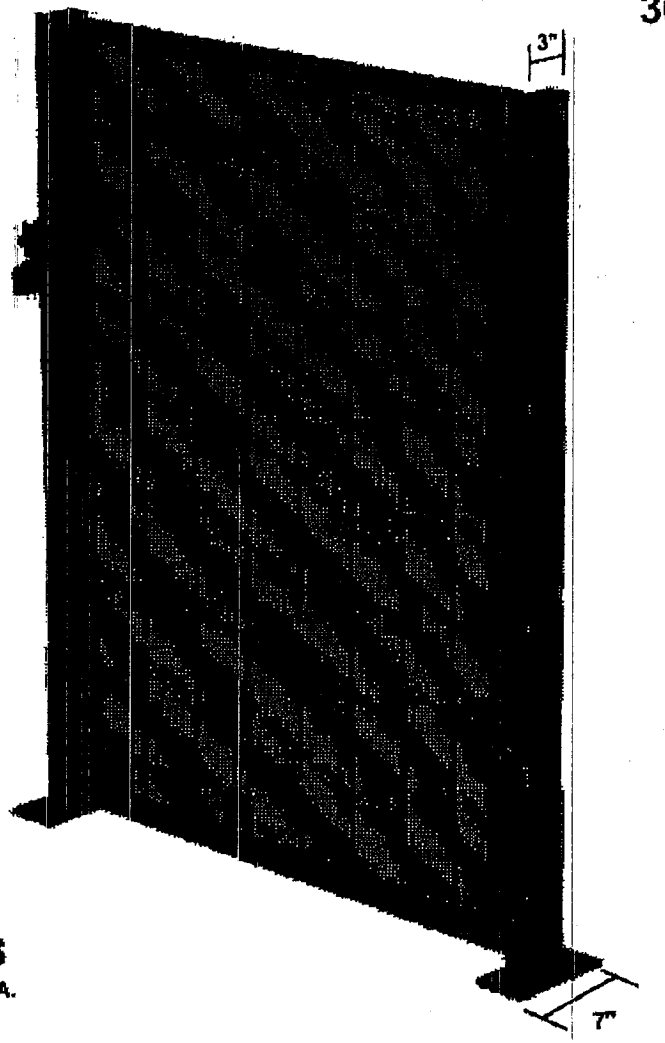


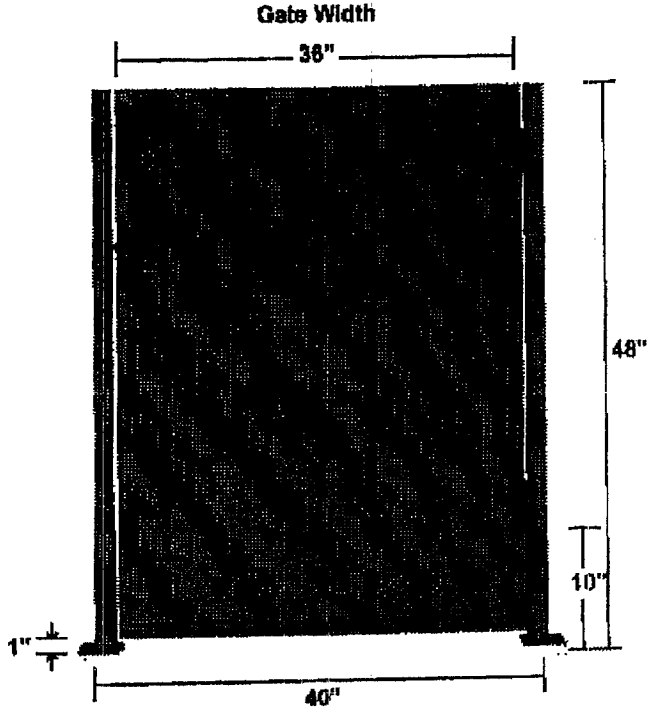
Lavi Industries

Concepts Prepared for T.S.A.

Approval: _____

80-50GATE/3
Floor Mounting Latching Gate, 36" Gate width, 2 posts, Clear Panel





Lavi Industries

Concepts Prepared for T.S.A.

Approval: _____

Barriers — Mounting Procedure

5000/2 - 5000/3 - 5000/4

Diagram 1

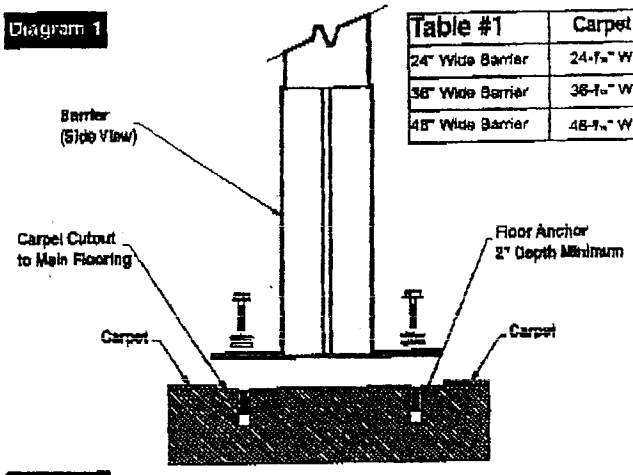


Table #1	Carpet Cutout
24" Wide Barrier	24-7/16" W x 8.0" D
36" Wide Barrier	36-7/16" W x 8.0" D
48" Wide Barrier	48-7/16" W x 8.0" D

Mounting Hardware Required

Recommended Hardware: (Not Included)

9/16"-18 x 2-1/2" (Minimum) Hex Bolts
Flat Washer
Split Lock Washer
9/16" x 2-1/2" Floor Anchor

Please see Chart A for quanities of the necessary hardware.

Chart A

Part #	Qty
80-5000/2	4
80-5000/3	6
80-5000/4	8

Diagram 2

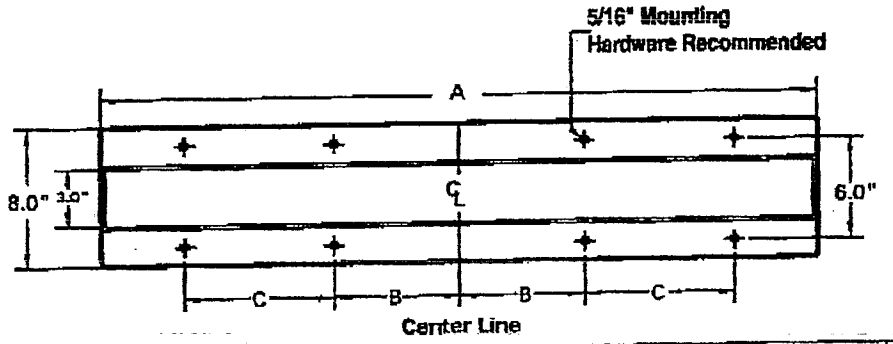
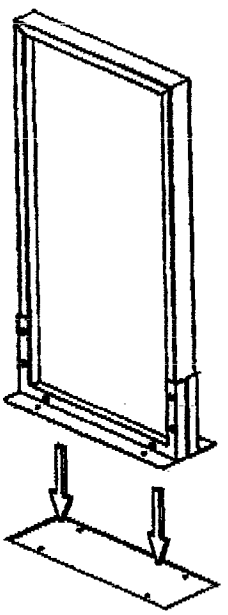


Table #2	A	B	C
24" Wide Barrier	24-7/16"	9"	N/A
36" Wide Barrier	36-7/16"	5-1/16"	10"
48" Wide Barrier	48-1/16"	11-1/256"	10"

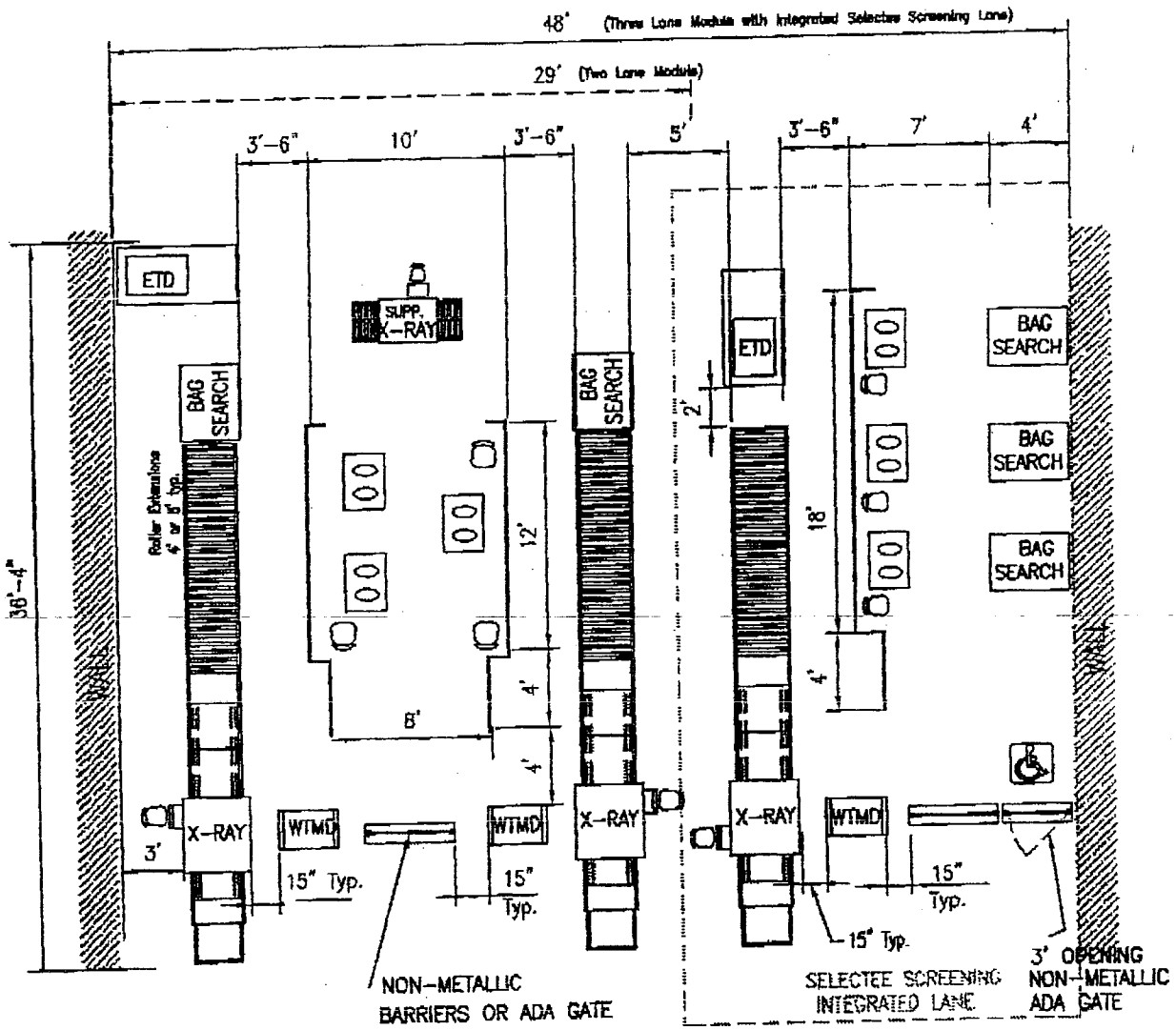
Diagram 3



Mounting Instructions:

1. For maximum stability, mount the barricade directly to the subfloor. If necessary cut away carpet to the dimensions of the barrier footprint. Specified in Table & Diagram 1.
2. Install floor anchors at specified locations correlating to your barrier size. Specified in Table & Diagram 2.
3. Position unit over floor anchors, aligning base plate holes over anchors. See Diagram 3.
4. Hand tighten all hardware. Then in a cross pattern torque to 25 ft/lbs until secured. (Shim as necessary to ensure the unit is level.)

TSA Airport Security Checkpoint Design Guidelines v.0703



NOTE: This drawing represents a checkpoint with optimized space layouts. Environment specific space constraints may require the modification of some dimensions. All checkpoint construction or reconfiguration plans must be reviewed and approved for compliance and operational effectiveness by TSA Aviation Operations prior to implementation.

7129 Westwind Dr.
Suite 105
El Paso, Texas
79912 1726

May 7, 2004

Isela Canava
City of El Paso
#2 Civic Center Plaza, City Hall
4th Floor
El Paso, TX 79901

MOORE NORDELL KROEGER ARCHITECTS

Dear Isela:

I have reviewed the cost proposal from C.F. Jordan in response to Proposal Request #11 to provide the "Home of the Sun Bowl" sign at the north side of the security addition.

I believe the cost is fair and I recommend that the City issue a Change Order for the requested amount.

Sincerely,

MOORE NORDELL KROEGER ARCHITECTS, INC.

Rodney Kroeger, AIA
Vice President

Attachment

cc: Monica Lombrana, El Paso International Airport
Pat Abeln, El Paso International Airport
Jim Carpenter, C.F. Jordan
Hector Olave, C.F. Jordan

915-587-8023
FAX 915-587-9989

P\01023\Arb\Security\010231.TRB0055.doc

C.F. Jordan, L.P.

7700 C.F. Jordan Drive
El Paso, TX 79912

Phone: (915) 877-3333
Fax: (915) 877-3999

CHANGE ORDER REQUEST
No. 00031

TITLE: Owner Change Order Request #31

DATE: 5/6/2004

PROJECT: EPIA Security Checkpoint & Terminal

JOB: I03018

TO: Attn: Isela F. Canava
CITY OF EL PASO
2 CIVIC CENTER PLAZA
Purchasing Department
El Paso, Texas 79901-1196
Phone: 915-541-4203 Fax: 915-541-4441

CONTRACT NO:

RE: **To:** **From:** **Number:**

DESCRIPTION OF PROPOSAL

For Moore Nordell Kroeger Proposal Request #0011

Item	Description	Quantity	Units	Unit Price	Tax Rate	Tax Amt	Net Amt
1.01	Provide and install (1) set of 24" tall helvetika 3/8" thick flat, high speed router cut, gold anodized on both sides letters (16 total to read: HOME OF THE SUNBOWL). Letters are to be installed to the horizontal tube that conceals the deluge sprinkler system. Option #3 from the sign subcontractor is Gold Anodized letters on both sides.	1.000	LS	$6,479.25	0.00%	$0.00	$6,479.25
1.02	We are requesting 10 additional days be added to the contract time.	1.000	LS	$0.00	0.00%	$0.00	$0.00

Unit Cost:	**$6,479.25**
Unit Tax:	**$0.00**
Lump Sum:	**$0.00**
Lump Tax:	**$0.00**
Total:	**$6,479.25**

APPROVAL:

By: Jim Carpenter
Jim Carpenter

Date: 5.06.04

By: _____
Isela F. Canava

Date: _____

STANDARD ESTIMATE REPORT
EPIA SECURITY CHECKPOINT

I03018

MNK PROPOSAL REQUEST # 0011 DATED 2.26.04 OPTION #3

ITEM	DESCRIPTION	TAKEOFF	QTY	AMOUNT	TOTAL AMT
1100.00	**GENERAL REQUIREMENTS**				
1101.00	SUPERINTENDENT	0	HRS	$ -	$ -
1141.00	PROJECT MANAGER	0	HRS	$ -	$ -
1142.00	ESTIMATING & SCHEDULING	0	HRS	$ -	$ -
	FOREMAN	0	HRS	$ -	$ -
1705.00	CLEANUP - CURRENT	0	HRS	$ -	$ -
1706.00	CLEANUP - RENT DUMPSTER	0	HRS	$ -	$ -
1711.00	CLEANUP - FINAL	0		$ -	$ -
1725.00	PUNCHLIST, ETC	0		$ -	$ -
1761.00	ALLOWANCES	0		$ -	$ -
	GENERAL REQUIREMENTS			$ -	$ -
10000	**SPECIALTIES**				
10430.01	SIGNS				
SUB	ADD SET OF 24' TALL HELVETIKA 3'8" THICK FLAT, H.S. PRECISION ROUTER CUT, GOLD ANODIZED ON BOTH SIDES LETTERS READING "HOME OF THE SUNBOWL"	1	LSUM	$ 5,617.00	$ 5,617.00
	SPECIALTIES			$ 5,617.00	$ 5,617.00

STANDARD ESTIMATE REPORT
EPIA SECURITY CHECKPOINT

I03018

MNK PROPOSAL REQUEST # 0011 DATED 2.26.04 OPTION #3

ESTIMATE TOTALS

LABOR	$	-	
SUBCONTRACT	$	5,617.00	
	$	**5,617.00**	
CONTINGENCY			
UMBRELLA INSURANCE			0.070
BUILDERS RISK INSURANCE	$	4.77	0.00085
GENERAL LIABILITY INS CONC			6.750
PAYROLL TAXES & INS ON LABOR			38.000
SUPERVISION P.T. & I.			32.000
BUILDERS PERMITS, ETC.			
GENERAL LIABILITY SUPERVISION			12.880
GENERAL LIABILITY SUBCONTRACTS	$	12.36	0.0022
SALES TAX			
CORP G & A			
BOND ADJUSTMENT			
SUBTOTAL	$	5,634.13	
FEE	$	845.12	15.00%
TOTAL	**$**	**6,479.25**	

SUPERIOR SIGN & LIGHTING LTD.

UNITED STATES SIGN COUNCIL

Corporate Office:
11445 Cedar Oak
El Paso, TX 79936
(915) 629-9100

New Mexico Branch:
2001 E. Lohman 110-286
Las Cruces, NM 88001
(505) 541-4595

1-800-530-8699 • Fax (915) 629-9105

TX LIC ES 100 NM LIC 88604

May 5, 2004

CF Jordan
Jim Carpenter
7700 CF Jordan Dr.
El Paso, TX 79912

Re: Proposal Request # 0011
El Paso International Airport
Consolidated Security Checkpoint
Project & Terminal Apron

Dear Mr. Carpenter,

Here is the price you requested to manufacture and install (1) set of 24" tall helvetika 3/8" thick flat, high speed precision router cut, gold anodized on both sides letters reading "HOME OF THE SUN BOWL". Letters to be installed on existing square tube sprinkler support with counter sunk screws drilled through the front of the letter into the square tube with the screw heads painted to catch gold anodized finish.

Labor & Materials $5617.00

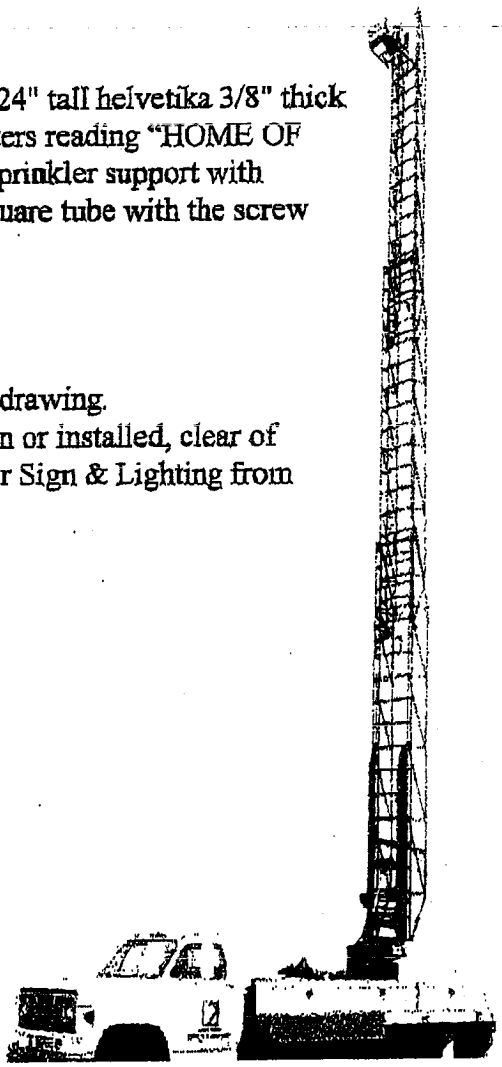
Production time approx. 15 days from date of signature of approved drawing.
-Customer is responsible for having area where signs to be worked on or installed, clear of debris, cars, displays, shelving, or anything that may impede Superior Sign & Lighting from performing the job contracted to do.

If you have any questions please call me.

_____
Approved by Jim Carpenter
If approved, please sign above and return by fax, (915)629-9105

Thank you,

Sean Taylor
President



MOORE NORDELL KROEGER
ARCHITECTS

FAX TRANSMITTAL

DATE:	2/26/2004	**FAX TRANSMITTAL:**	0163
TO:	City of El Paso #2 Civic Center Plaza, City Hall 4th Floor El Paso, TX 79901	**FAX#:** **PHONE:**	(915)541-4441 (915)541-4974
ATTN:	Isela Canava		
PROJECT:	01023 Consolidated Security Checkpoint		
RE:	Proposal Request #11		
COVER MESSAGE:			

FROM: Steve Dominguez

COPIES TO: C.F. Jordan: Hector Olave, EPIA: Monica Lombrana, MNK Architects: Rod Kroeger

2 Page(s) being sent (including Fax Coversheet). If you have not received all of the page(s), please call our office at (915) 587-8023. Thank You!

Transmitted By: Steve Dominguez

7170 Westwind Dr., Ste. 105, El Paso, TX 79912-1726
(915)587-8023 FAX(915)587-0985

MOORE NORDELL KROEGER
ARCHITECTS

PROPOSAL REQUEST

PROJECT	01023 Consolidated Security Checkpoint	**PROPOSAL REQUEST #:**	0011
OWNER:	C.F. Jordan 7700 C.F. Jordan Drive El Paso, TX 79912	**DATE:**	2.26.04
TO (Contractor):	C.F. Jordan	**CONTRACT DATED:**	
ATTN:	Hector Olave		
CONTRACT FOR:	EPIA - Consolidated Security Checkpoint		

Please submit an itemized quotation for changes in the Contract Sum and/or Time incidental to proposed modifications to the Contact Documents described herein.

THIS IS NOT A CHANGE ORDER NOR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED HEREIN.

DESCRIPTION: (Written description of the Work)

Provide and Install pre-fabricated, pre-finished letters, (16 total to read: HOME OF THE SUNBOWL). Letters are to be 3/8" thick X 24" high. Letters are to be high speed precision router cut and installed with studs on the rear of the letter attached to steel tube. Font is to be upper case Helvetica bold.

ATTACHMENTS:

ARCHITECT: Moore Nordell Kroeger Architects, Inc.

BY: **Steve Dominguez**

7170 Westwind, Suite 105, El Paso, TX 79912
(915)587-8023 FAX(915)587-0985

MOORE NORDELL KROEGER
ARCHITECTS

RECEIVED
MAR 15 2004
ENGINEERING DEPT.

TRANSMITTAL LETTER

PROJECT: 01023 EPIA Checkpoint

TRANSMITTAL#: 0165

DATE: 3.15.04

SENT VIA: ☐ US MAIL ☒ HAND CARRIED ☐ OVERNIGHT ☐ OTHER

TO: C.F. Jordan
7700 C.F. Jordan Drive
El Paso, TX 79912

If enclosures are not as noted, please inform us immediately.
If checked below, please:

☒ Acknowledge receipt of enclosure

☐ Return enclosures to us

ATTN: Hector Olave

ACTION TAKEN: ☒Approved ☐Disapproved

WE TRANSMIT: ☒Herewith ☐Under separate cover via _____ ☐In accordance with your request _____

FOR YOUR: ☐Approval ☐Distribution to parties ☐Information ☐review & comment ☐Record ☒Use ☐Other _____

THE FOLLOWING: ☒Drawings ☐Shop Drawing Prints ☐Samples ☒Specifications ☐Contract ☐Diskettes ☐Change Order ☐Pay Request ☐Other

Copies:	Description:
1	**Proposal Request #12**

COPIES TO: MNK Files
City of El Paso: Isela Canava
EPIA: Monica Lombrana

BY: Steve Dominguez

7170 Westwind Dr., Ste. 105, El Paso, TX 79912-1726
(915)587-8023 FAX(915)587-0985

MOORE NORDELL KROEGER
ARCHITECTS

PROPOSAL REQUEST

PROJECT	0123 EPIA Checkpoint	**PROPOSAL REQUEST #:**	0012
OWNER:	C.F. Jordan 7700 C.F. Jordan Drive El Paso, TX 79912	**DATE:**	3.15.04
TO (Contractor):	C.F. Jordan	**CONTRACT DATED:**	
ATTN:	Hector Olave		
CONTRACT FOR:			

Please submit an itemized quotation for changes in the Contract Sum and/or Time incidental to proposed modifications to the Contract Documents described herein.

THIS IS NOT A CHANGE ORDER NOR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED HEREIN.

DESCRIPTION: (Written description of the Work)

Provide and Install additional HVAC unit for Room A204 as indicated on Attachments PR.12.1 through PR.12.5

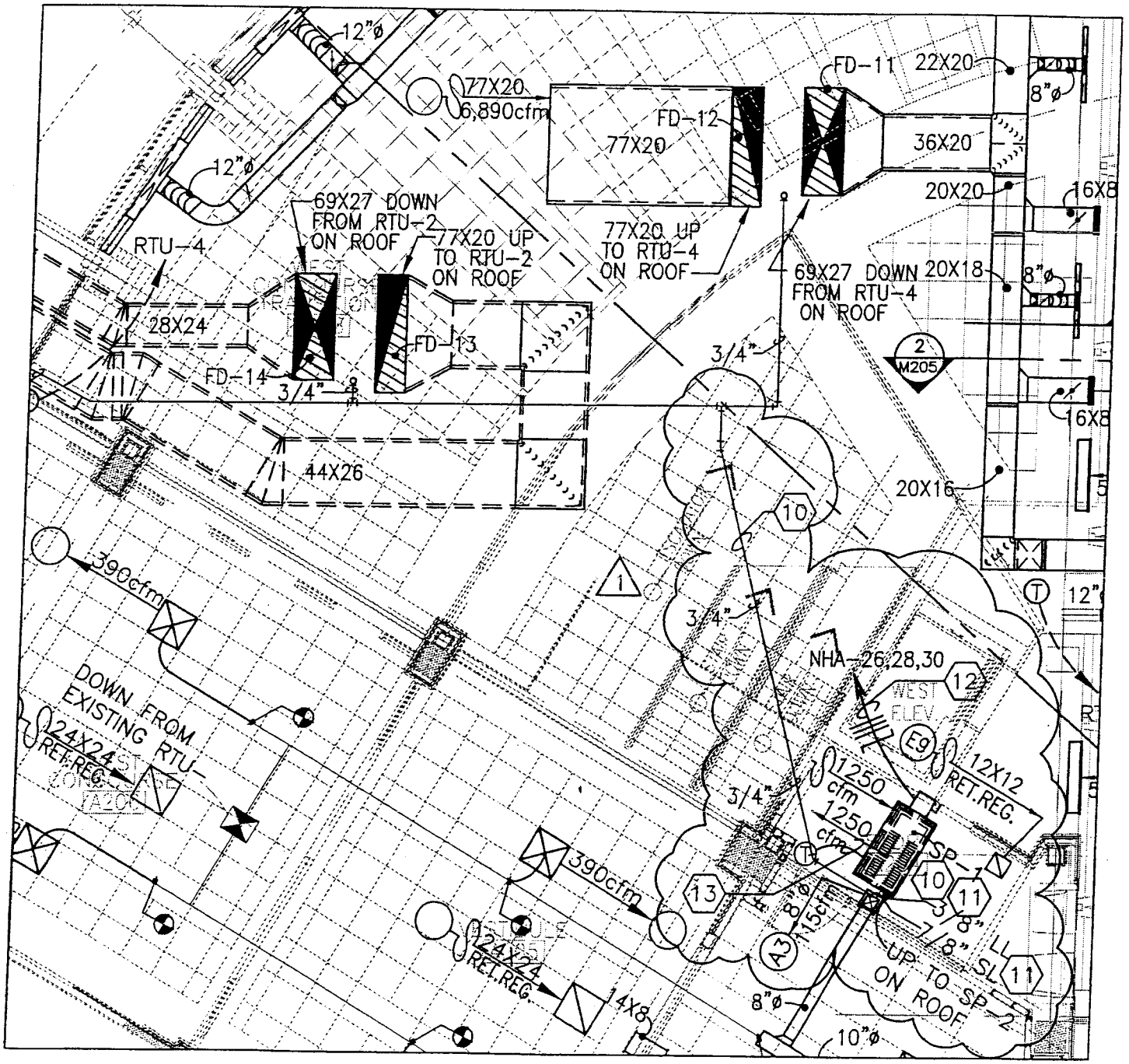
ATTACHMENTS:

8 ½" x 11" PR.12.1 through PR.12.5

ARCHITECT: Moore Nordell Kroeger Architects, Inc.

BY: **Steve Dominguez**

7170 Westwind, Suite 105, El Paso, TX 79912
(915)587-8023 FAX(915)587-0985



PARTIAL REVISED HVAC 2ND FLOOR PLAN

SCALE: 1/8"=1'-0"

REFERENCE SHEET	EL PASO INTERNATIONAL AIRPORT CONSOLIDATED SECURITY CHECKPOINT 2ND FLOOR SECURITY SYSTEM	PROJECT NUMBER 0123	DATE 3/10/04
M201		BATH PROJECT NUMBER 1175-04	ATTACHED DRAWING NUMBER SKM201A

ATTACHMENT PR 12.1

MOOR NORDEL KROEGER

KEYED NOTES:

1. CONTRACTOR TO VERIFY EXACT SIZE OF DUCTWORK.
2. SEE DRAWING M202 FOR DUCTWORK CONTINUATION.
3. INSTALL WIRE MESH RETURN GRILLE
4. NEW CONDENSATE LINE FROM UNIT ON ROOF. COORDINATE ROUTING AS NECESSARY TO AVOID CONFLICTS
5. ADDED CEILING DIFFUSER WITH CFM REQUIREMENT NOTED. APPROXIMATE ROUTING AND POINT OF CONNECTION SHOWN AS WELL AS DUCT SIZE REQUIRED. (TYPICAL)
6. REPLACE EXISTING DIFFUSER WITH MATCHING DIFFUSER FOR NEW WORK. PROVIDE SIZE AS REQUIRED.
7. PROVIDE FIRE/SMOKE DAMPERS AS REQUIRED BY DUCT SIZE.
8. ALL SINGLE SLOT DIFFUSERS SHALL HAVE HORIZONTAL THROW TOWARDS THE EAST AND WEST CONCOURSE TRANSITION ACCORDINGLY. (TYPICAL)
9. ALL DOUBLE SLOT DIFFUSERS SHALL HAVE VERTICAL AND HORIZONTAL THROW. (TYPICAL)
10. PROVIDE A CONDENSATE PUMP IF CONDENSATE DRAIN FROM UNIT IS BELOW THE TIE-IN POINT. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND MAKE NECESSARY ADJUSTMENTS.
11. PROVIDE INSULATION FOR LIQUID LINE AND SUCTION LINE. INSULATION SHALL BE POLYELEFIN WITH WEATHERPROOF JACKET.
12. EXTEND 3#10, 1#10 GND. IN 3/4"C. TO CIRCUIT INDICATED. FURNISH AND INSTALL A 15A/3P HACR BREAKER IN SPACES 26,28,30 OF PANEL "NHA" TO FEED THIS EVAPORATOR.
13. 3/4"C. WITH PULLSTRING. CONDUCTORS AND T-STAT BY CONTROLS CONTRACTOR. OUTLET BOX BY ELECTRICAL.

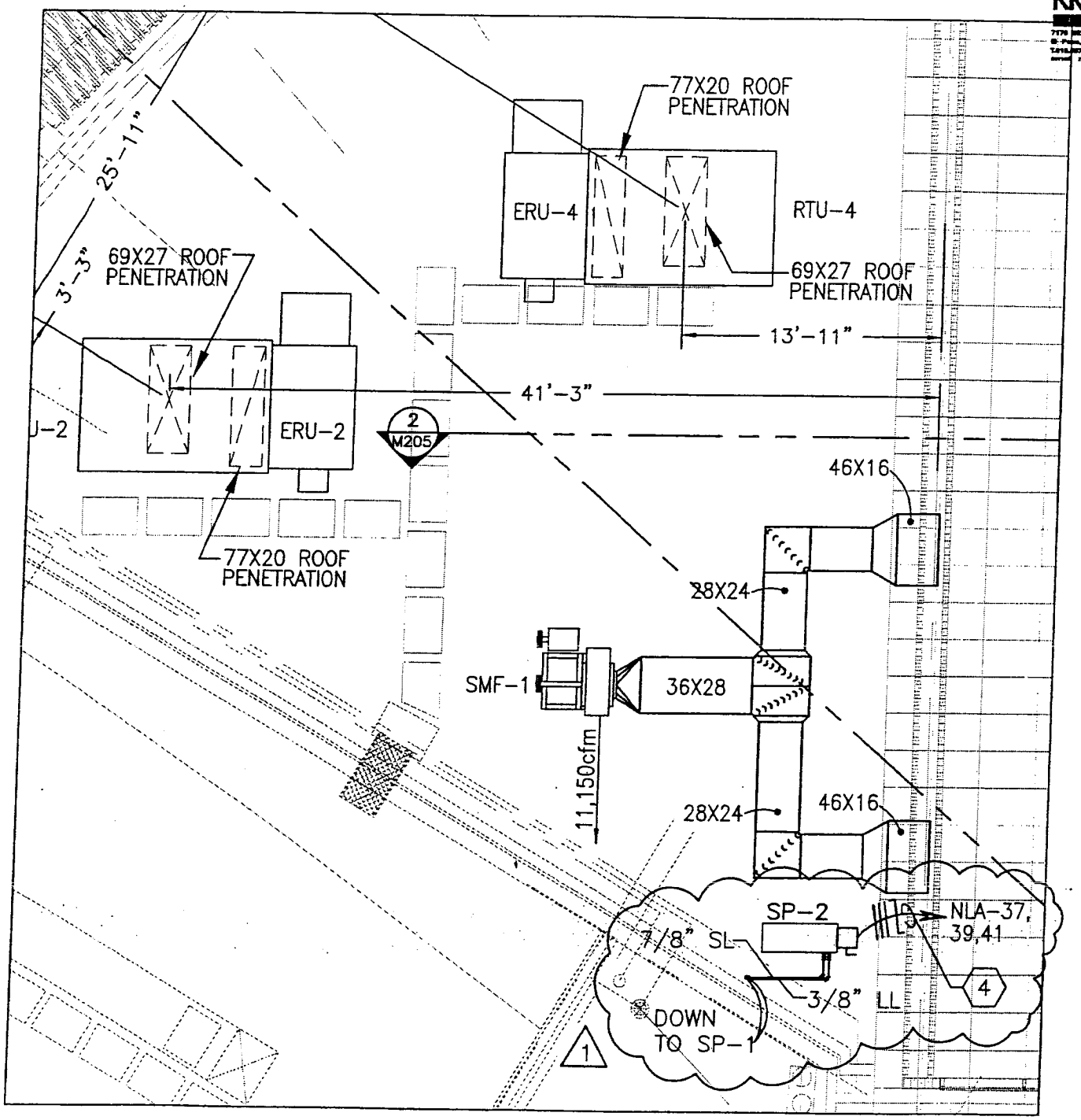
1

PARTIAL REVISED HVAC 2ND FLOOR PLAN

SCALE: 1/8"=1'-0"

REFERENCE SHEET		PROJECT NUMBER	DATE
M201	EL PASO INTERNATIONAL AIRPORT CONSOLIDATED SECURITY CHECKPOINT 2ND FLOOR SECURITY SYSTEM	0123	3/10/04
		BATH PROJECT NUMBER: 1175-04	ATTACHED DRAWING NUMBER: SKM201B

MOOR
NORDEL
KROEGE



PARTIAL REVISED HVAC ROOF PLAN

SCALE: 1/8"=1'-0"

REFERENCE SHEET	EL PASO INTERNATIONAL AIRPORT CONSOLIDATED SECURITY CHECKPOINT 2ND FLOOR SECURITY SYSTEM	PROJECT NUMBER 0123	DATE 3/10/04
M202		BATH PROJECT NUMBER 1175-04	ATTACHED DRAWING NUMBER SKM202A

MOOR
NORDEL
KROEGE

KEY NOTES:

1. SEE M201 FOR DUCTWORK CONTINUATION.
2. SMOKE EXHAUST FANS, SMF-1 AND SMF-2, SHALL BE INTERLOCKED WITH THE EXISTING FIRE CONTROL PANEL. REFER TO SPECIFICATION SECTION "SEQUENCE OF OPERATION" FOR CONTROL PROCEDURES.
3. PROVIDE INSULATION FOR LIQUID LINE AND SUCTION LINE. INSULATION SHALL BE POLYELEFIN WITH WEATHERPROOF JACKET.
4. EXTEND 3#10, 1#10 GND. IN 3/4"C. REMOVE EXISTING 20A/1P BREAKER FROM CIRCUITS 37,39,41 AND REPLACE WITH A 25A/3P HACR BREAKER TO FEED THIS CONDENSER.

1

PARTIAL REVISED HVAC ROOF PLAN

SCALE: 1/8"=1'-0"

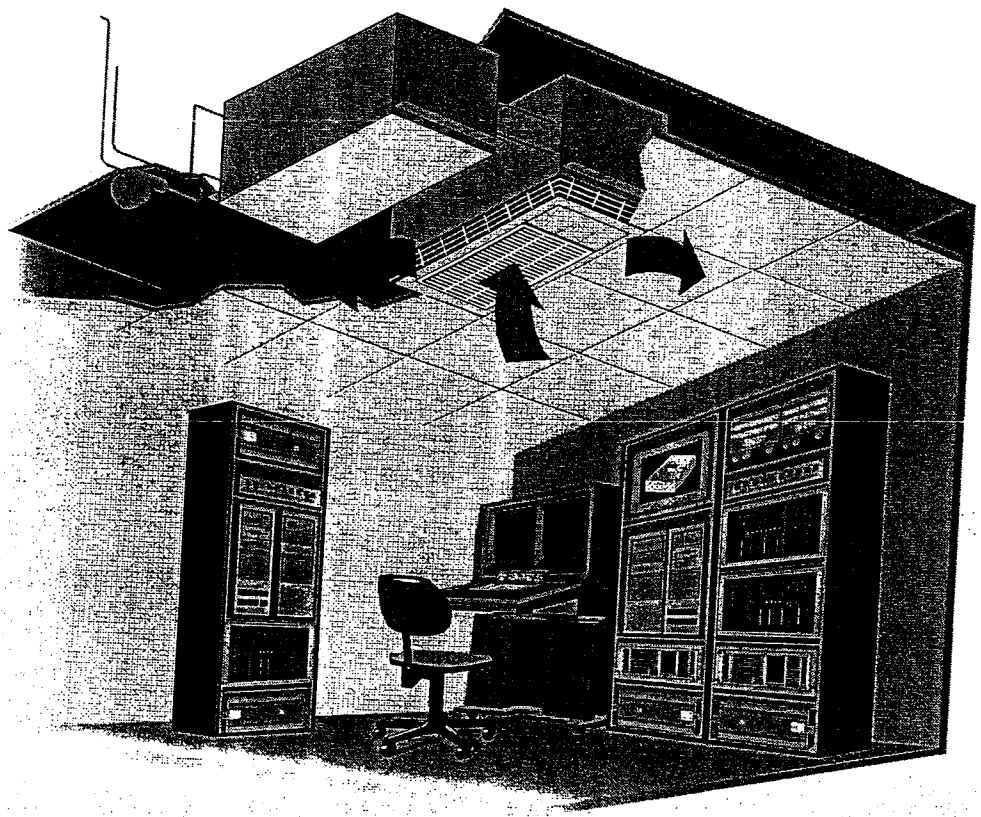
REFERENCE SHEET	EL PASO INTERNATIONAL AIRPORT CONSOLIDATED SECURITY CHECKPOINT 2ND FLOOR SECURITY SYSTEM	PROJECT NUMBER 0123	DATE 3/10/04
M202		BATH PROJECT NUMBER 1175-04	ATTACHED DRAWING NUMBER SKM202B

ENVIRONMENTAL CONTROL

Liebert®

ENGINEERING MANUAL

Mini-Mate2
2 and 3 Ton
50 & 60 Hz



ISO 9000 CERTIFIED COMPANY

ATTACHMENT PR. 12.5

Table of Contents

DESIGNED TO MATCH COMPUTER & ELECTRONIC EQUIPMENT NEEDS — FROM INSTALLATION TO OPERATION

Installed above the ceiling, the Mini-Mate2 Systems control the cooling, humidity and air distribution required by sensitive electronic equipment. A range of sizes and configurations are available to meet site needs.

The Mini-Mate2 is also easy to use. Advanced microprocessor technology allows easy, precise control, and menu-driven monitoring keeps you informed of system operation on the LCD readout. These features, combined with Liebert quality construction and reliable components, guarantee satisfaction from installation through operation.

Computer Matched. Liebert Systems are designed to control the environment required for computers and other sensitive electronic equipment. Mini-Mate2 provides complete control on an around-the-clock basis, and the high sensible heat ratio required by sensitive electronic equipment.

Easy Installation. Each split system has thermostat-type wiring to controls and condensing unit. Pre-charged refrigerant lines are also available to further simplify installation.

Easy to Service. Low maintenance components are easily accessed through removable front panels. Spare parts are always in Liebert inventory and available on short notice.

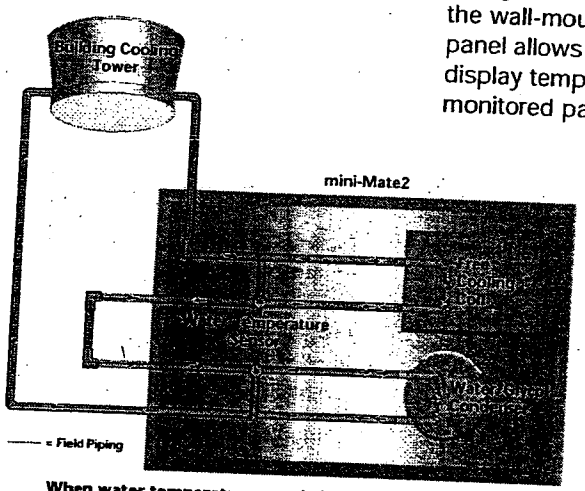
Advanced Control Technology. A menu-driven microprocessor control system provides precise temperature and humidity control, and accurate alarm setpoints. Using touch sensitive buttons, the wall-mounted monitor/control panel allows you to select and display temperature and other monitored parameters.

High Efficiency. High sensible heat ratio, two selectable fan speeds and precise microprocessor control allow the system to operate efficiently.

Space Saving Design. All indoor components are installed above the ceiling, so no floor space is required.

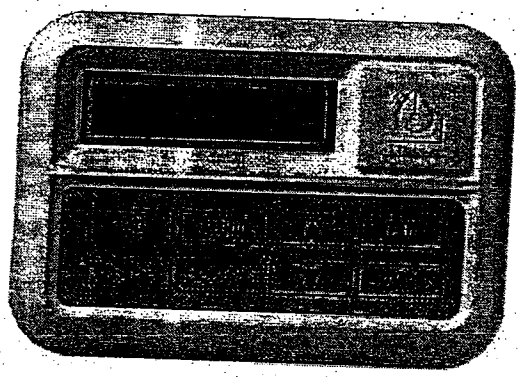
Reliable. The Mini-Mate family installed base is a testimony to the system reliability. Components include a rugged compressor, high efficiency copper-tube, aluminum-fin evaporator coil and double inlet, direct drive fan.

Agency Listed. Units are ETL and CSA (NRTL-C) certified. NRTL-C meets both U.S. and Canadian government safety requirements, providing fast, hassle-free inspection and building code approvals. The units are also MEA listed, for New York City applications.



When water temperature goes below 45°, cooling switches over to Free-Cooling operation. A separate chilled water source can also be used with Air-Cooled system.

■ Free-cooling option. A second cooling coil allows the system to take advantage of colder outdoor temperatures and bypass compressor operation.



The microprocessor control system, with its user-friendly wall-mounted display, provides precise control of all unit functions.

Standard Features — 2 & 3 Ton Systems

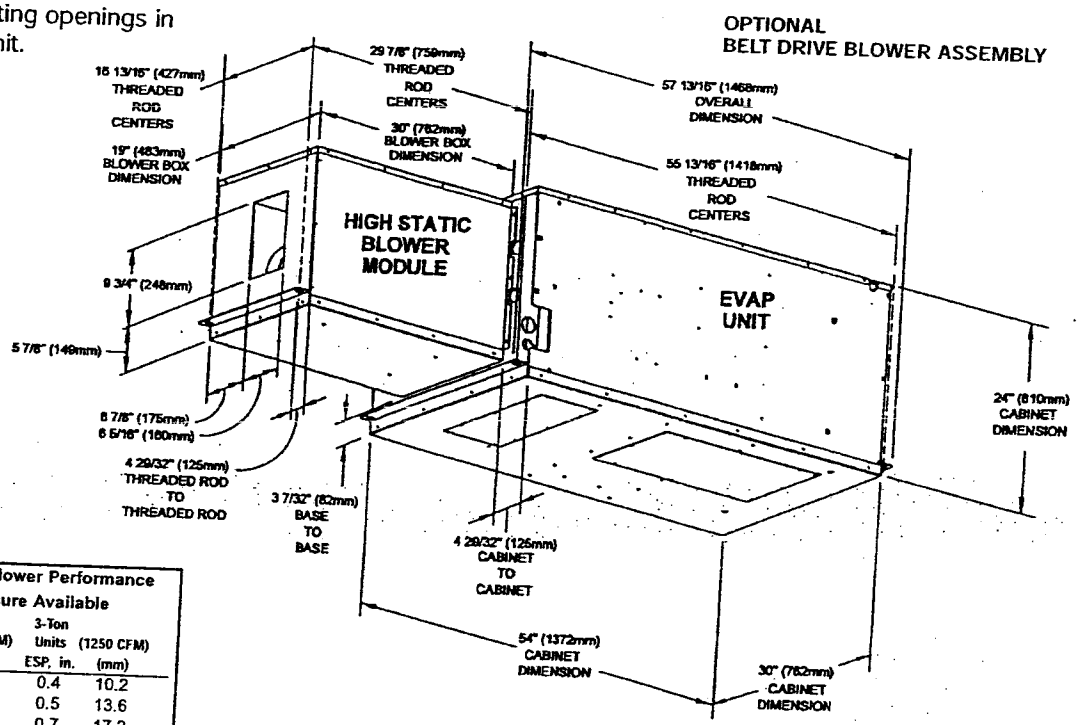
- The Mini-Mate2 is a split system air, water, or glycol cooled unit, or self-contained chilled water unit.
- The evaporator section includes the evaporator coil, blower assembly, and microprocessor control.
- Centrifugal Fan Condensing Unit includes scroll compressor, condenser coil, centrifugal blower assembly, high-pressure switch, Lee-temp head pressure control. Unit must be mounted indoors. Duct flanges are provided.
- The standard prop fan condensing unit includes scroll compressor, prop fan, high head pressure switch, and Lee-temp head pressure control. Condensing unit is rated for 95°F (35°C) ambient.
- Water/Glycol Condensing Units include scroll compressor, coaxial condenser, high head pressure switch, and 2-way water regulating valve designed for 150 psi (1034.3 kPa). Condensing unit can be used on water or glycol cooling loop.
- Chilled water fan/coil section includes chilled water coil and 2-way slow close motorized solenoid valve. Design pressure is 300 psi (1034.3 kPa), 60 psi close-off differential.
- Microprocessor Control includes a 2-line, 16 character, wall-mounted LCD display which provides temperature setpoint and sensitivity adjustment, humidity setpoint and sensitivity adjustment, digital display of temperature, humidity, setpoints, sensitivities, and alarm conditions. An 8-key membrane keypad for setpoint/program control, unit on/off, fan speed, and alarm silence is located below the LCD display. The wall box display is connected to the main control board with four (4), field supplied thermostat-type wires. The temperature and humidity sensors are located in the wallbox, which can be remote up to 300 feet (91.4 m) from the evaporator unit. Control also includes common alarm terminals and shutdown terminals. The unit automatically restarts after a power outage.

Optional Equipment (Factory Installed)

- Electric Reheat includes 304/304 stainless steel finned tubular reheat elements, with high limit safety switch.
- SCR Electric Reheat includes the controller and software to provide full cooling with modulating reheat. Reheat capacity is upsized to offset the cooling capacity.
- Hot Water Reheat includes hot water coil, 2-way solenoid valve, and Y-strainer. Note: this option is not available with free-cooling option, or other reheat options.
- Canister Humidifier Package includes steam generating type humidifier with automatic flushing circuit, inlet strainer, drain, and solenoid valve.
- Free-Cooling Option includes coil, 3-way solenoid valve, and separate supply and return piping for chilled water cooling. Free-cooling is activated when water temperature reaches pre-set temperature. Valve is rated for 300 psi (1034.3 kPa) working pressure.
- Hot Gas Bypass is factory piped in condensing units and includes bypass valve, solenoid valve, and necessary piping for manual capacity modulation.
- Smoke Detector is factory installed and wired to provide an audible and visual alarm at the wallbox, and shut the unit off.
- Firestat senses the return air temperature and shuts down unit if temperature reaches 125°F (51.7°C).
- Prop fan Condensing Units are available in the following optional configurations:
  - 95°F (35°C) ambient with hot gas bypass, for low load conditions.
  - 105°F (40°C) ambient for high ambient conditions.
  - 105°F (40°C) ambient with hot gas bypass for high ambient and low load conditions.
  - 95°F (35°C) ambient Quietline for low noise level conditions below 56 dba.
- Water/Glycol Condensing Units are available with the following piping options:
  - 2-way water reg. valve with 300 psi (2068 kPa) design pressure.
  - 3-way water reg. valve with 150 psi (1034 kPa) design pressure.
  - 3-way water reg. valve with 300 psi (2068 kPa) design pressure.
- Factory installed non-fused disconnect switch allows unit to be turned off for maintenance. Disconnect switch is available on evaporators and indoor condensing units.
- 3-way slow close chilled water solenoid valve, rated for 300 psi (1034.3 kPa) working pressure.

Ship-Loose Accessories

- High Static Blower Assembly is field attached to the evaporator to provide up to 2.0" (51mm) of external static pressure on the discharge side of the evaporator. The blower box contains a centrifugal type, double inlet blower, with belt drive and 1.5 hp single speed motor, mounted to an adjustable motor base.
- Filter Box includes filter box with 1" (25.4 mm) duct flange connection, 20" x 20" x 4" (508mm x 508mm x 102mm) filter, and a 1" (25.4 mm) duct flange for use on the supply air opening. A 20% or 30% efficient filter is available.
- Air Distribution Plenum includes molded plastic 4-way air discharge plenum, 16" x 25" x 4" (406.4 mm x 635 mm x 101.6 mm) 20% efficient filter and sheetmetal block-off plates for covering the ducting openings in the evaporator unit.
- Pre-Charged Refrigerant Line set contains an insulated copper suction line and a copper liquid line for interconnection to the condensing unit. Lines are available in 15-foot (4.5m) and 30-foot (9m) lengths.
- Refrigerant-line Sweat Adapter Kit contains two suction and two liquid line compatible fittings that allow field-supplied refrigerant lines to be used.
- Condensate Pump is field mounted on the rear of the cabinet and is equipped with a check valve.
- 277 Volt Transformer is required to step down voltage on outdoor prop fan condensing units that are connected to 277 volt service. Transformer is epoxy encapsulated and is suitable for indoor/outdoor service.
- Remote Temperature and Humidity Sensors include sensors mounted in an attractive case with 30 ft. (9m) of cable. Note: Microprocessor control includes sensors mounted in the wallbox.
- Monitoring and Control Equipment is available for the Mini-Mate2:
  - SiteScan Site Monitoring System
  - Dry Contact Monitors RCM 4 and RCM 8
  - Auto-changeover controls, AC3 and RAC2-8
  - Single point power kit interconnects the high voltage sections of a close-coupled evaporator and indoor condensing unit.

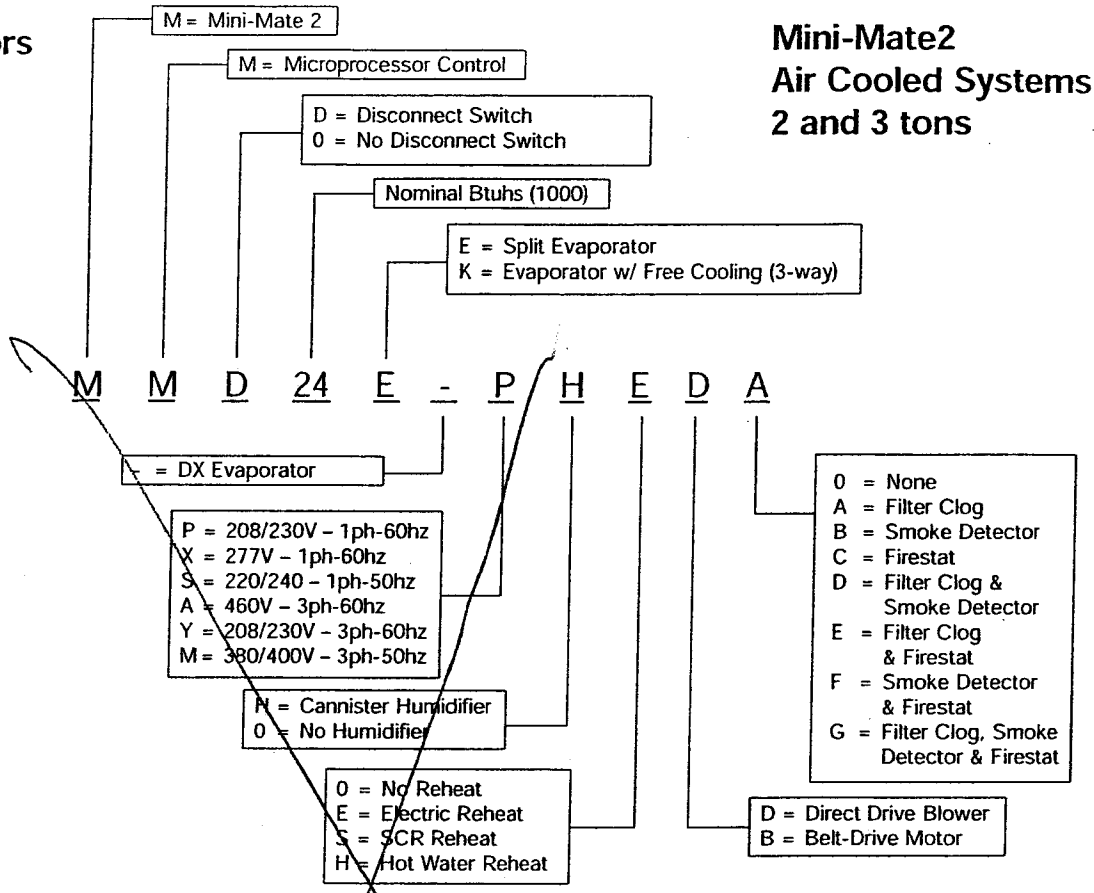


High Static Blower Box, Blower Performance
External Static Pressure Available

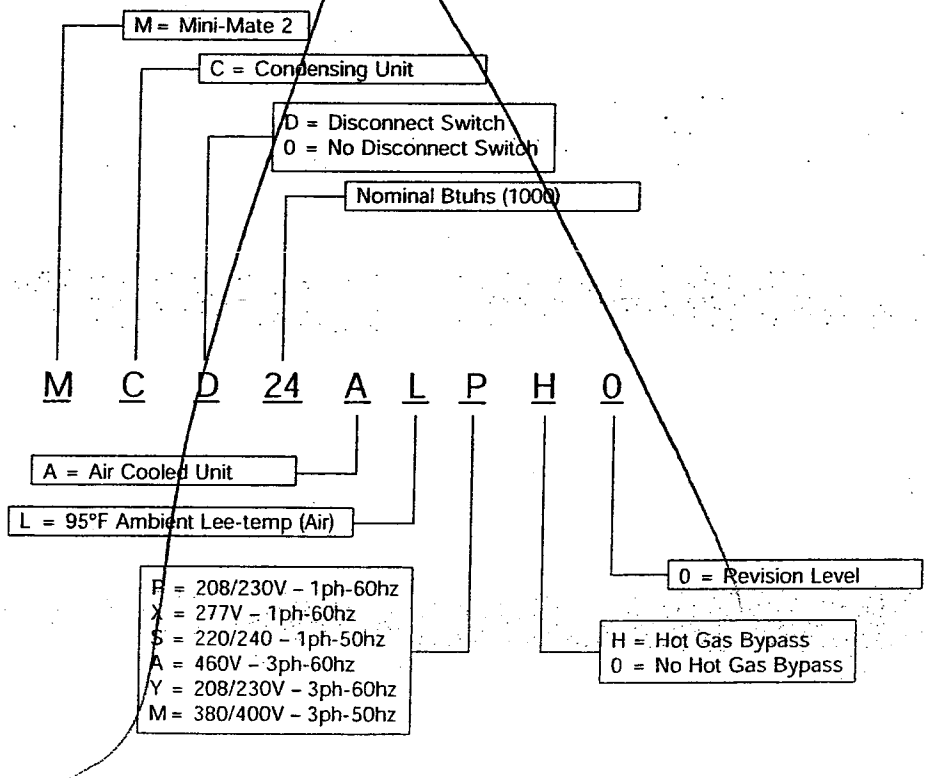
Sheave Turns	RPM	2-Ton Units (885 CFM) ESP, in.	(mm)	3-Ton Units (1250 CFM) ESP, in.	(mm)
5	1450	1.0	25.4	0.4	10.2
4.5	1510	1.1	28.8	0.5	13.6
4	1570	1.3	32.4	0.7	17.2
3.5	1630	1.4	36.1	0.8	20.9
3	1690	1.6	40.0	1.0	24.7
2.5	1750	1.7	44.0	1.1	28.7
2	1810	1.9	48.1	1.3	32.8
1.5	1870	2.1	52.4	1.5	37.1
1	1930	2.2	56.8	1.6	41.5
0.5	1990	2.4	61.3	1.8	46.1
0	2050	2.6	66.0	2.0	50.8

Evaporators

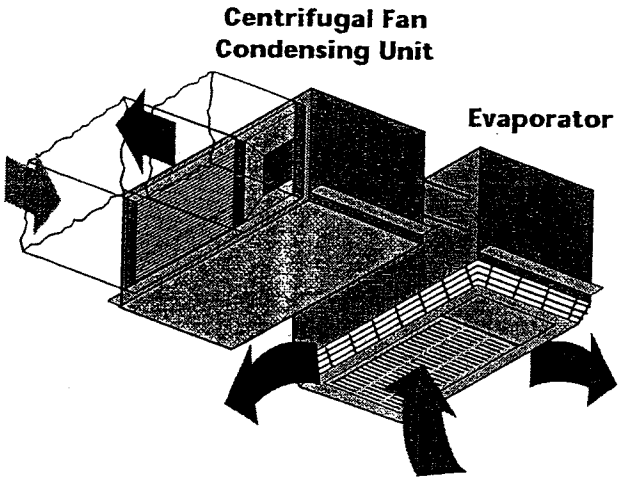
Mini-Mate2
Air Cooled Systems
2 and 3 tons



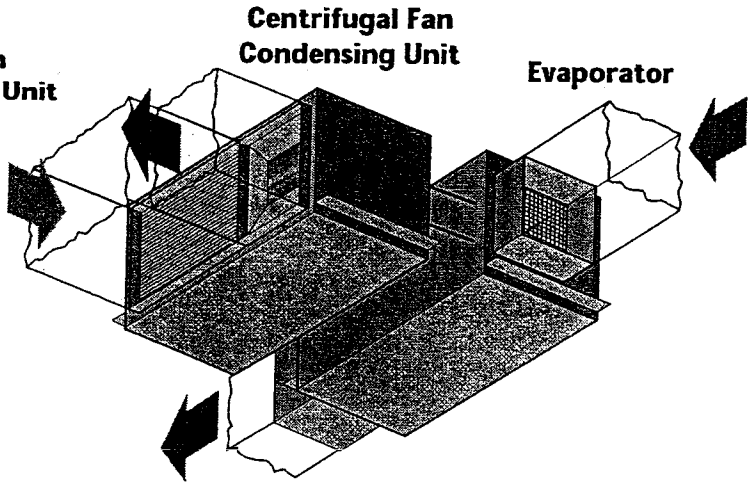
Centrifugal Air Cooled Condensing Units



Mini-Mate2
Air Cooled Systems
2 and 3 tons

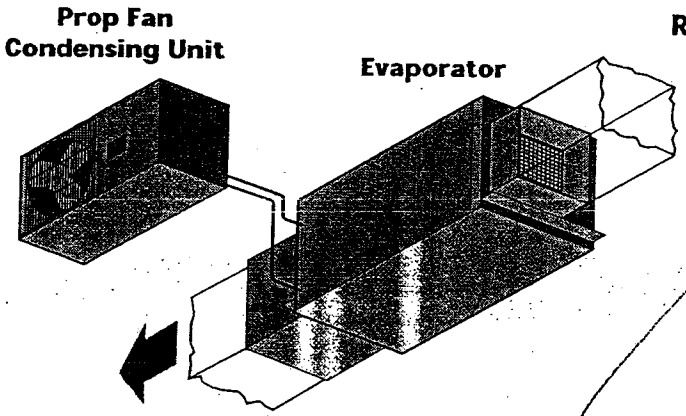


Split System Evaporator
Supply & Return Air Plenum
Remote Air Cooled Condensing Unit

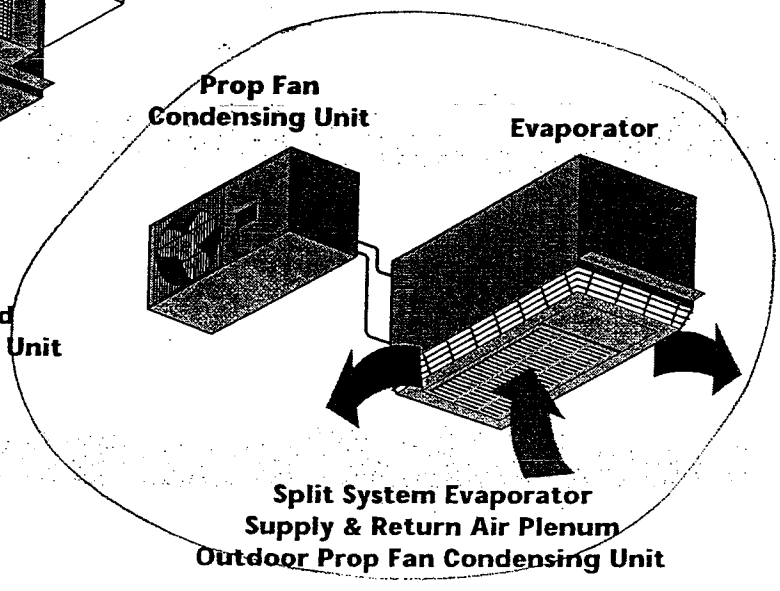


Split System Evaporator
Supply & Return Air Ducted
Remote Air Cooled Condensing Unit

Note: All split systems may be close-coupled or configured with condensing unit located remotely from the evaporator.



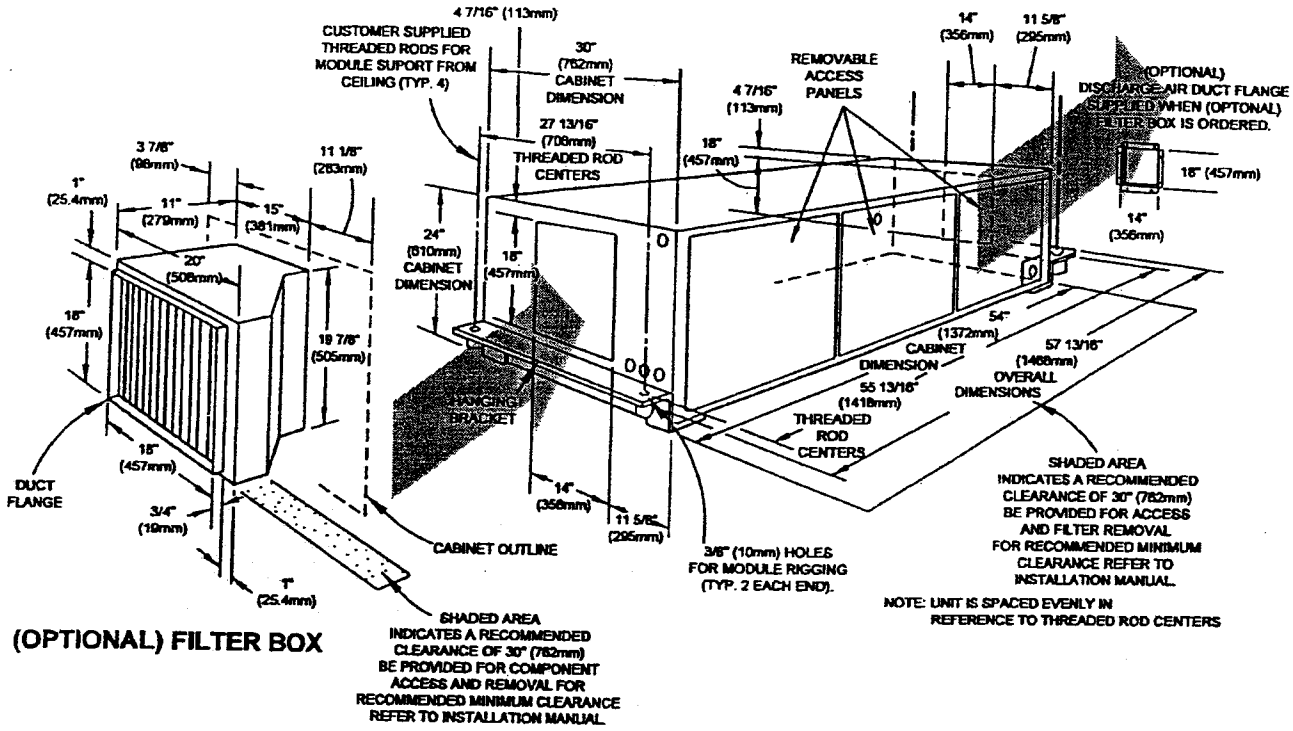
Split System Evaporator
Supply & Return Air Ducted
Outdoor Prop Fan Condensing Unit



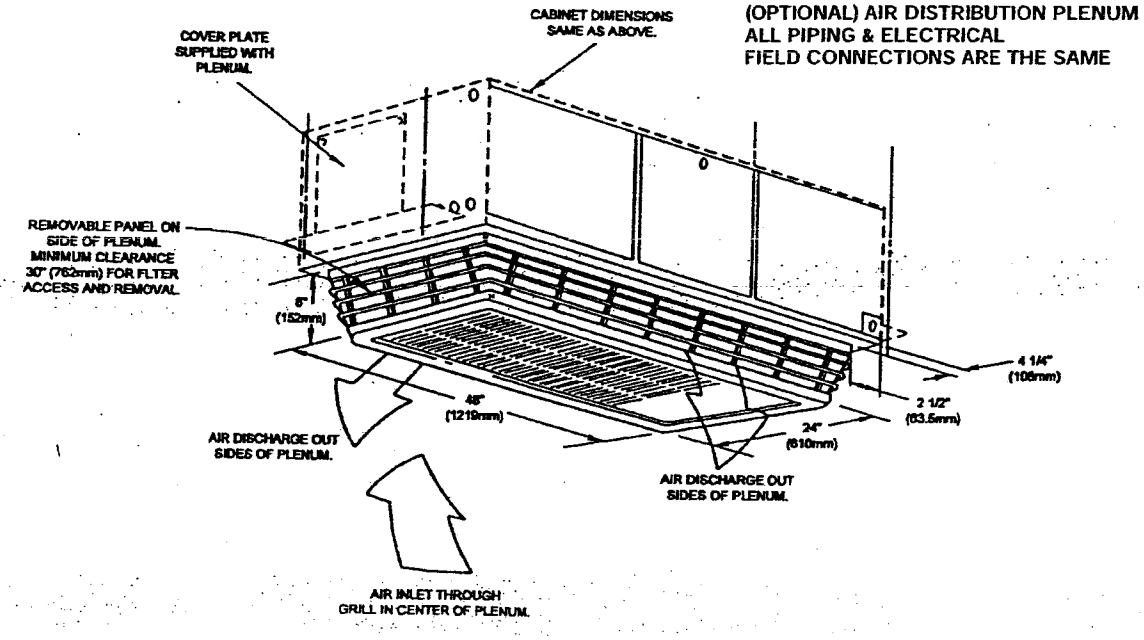
Split System Evaporator
Supply & Return Air Plenum
Outdoor Prop Fan Condensing Unit

2-ton and 3-ton Mini-Mate2, Air Cooled Systems
Unit Dimensional Data

FAN/COIL MODULE



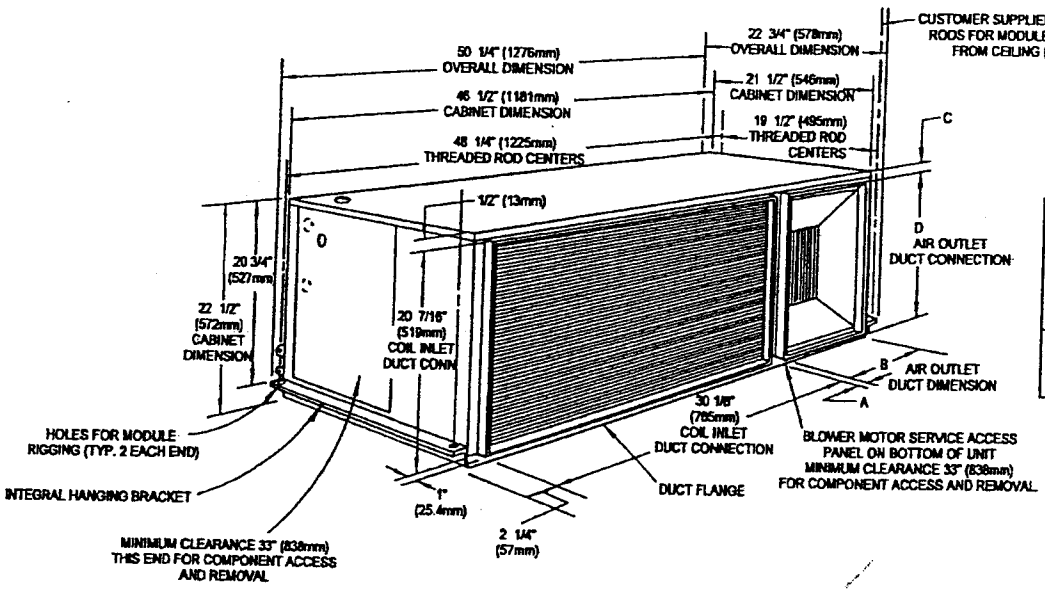
(OPTIONAL) FILTER BOX



(OPTIONAL) AIR DISTRIBUTION PLENUM
ALL PIPING & ELECTRICAL
FIELD CONNECTIONS ARE THE SAME

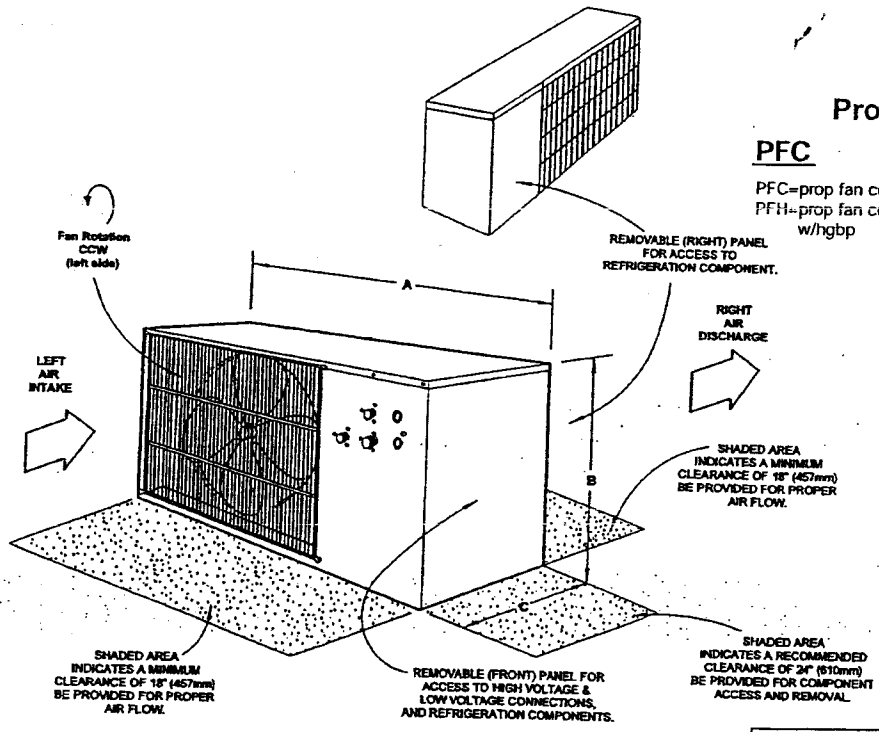
(OPTIONAL) AIR DISTRIBUTION PLENUM
ALL PIPING & ELECTRICAL FIELD CONNECTIONS ARE THE SAME

2-ton and 3-ton Mini-Mate2, Air Cooled Systems
Dimensions & Electrical Field Connections



MODEL	DIMENSIONS IN (MM)			
	A	B	C	D
MC*23A MC*24A	1 7/16 (37)	11 7/16 (280)	1/2 (13)	20 7/16 (519)
MC*35A MC*36A	1 7/16 (37)	11 7/16 (280)	1/2 (13)	20 7/16 (519)

*specify disconnect or no disconnect



Prop Fan Condensing Units (60hz)

PFC **0** **37** **A** **-** **P** **L** **0**

PFC=prop fan conds.
PFH=prop fan conds w/hgbp

0=Std Noise Level
Z=Quiet Line

Nominal Capacity (1000 btu/hrs)

Air Cooled

-=Std Coil
C=Coated Coil

P=208/230 1ph 60hz
S=220/240 1ph 50hz
Y=208/230 3ph 60hz
E=380 3ph 60hz
A=460 3ph 60hz
B=600 3ph 60hz
N=200/230 3ph 50hz
M=380/415 3ph 60hz

L=95F Ambient Lee Temp
H=105F Ambient Lee Temp

Rev #

MODEL NUMBERS		DIMENSIONS IN (MM)			MODULE WEIGHT
60 HZ	50 HZ	WIDTH A	HEIGHT B	DEPTH C	lbs. (kg) net
PFC027A_L PFH027A_L PFC027A_H	PFC026A_L PFC026A_H	40 (1016)	23 1/2 (597)	18 (457)	200 (91)
PFH027A_H PFCZ27A_L PFC037A_L PFH037A_L	PFCZ26A_L PFC036A_L	48 (1219)	31 (787)	18 (457)	241 (109)
PFC037A_H PFH037A_H PFCZ37A_L	PFC036A_H PFCZ36A_L	53 (1343)	36 1/4 (918)	18 (457)	351 (159)

Air Cooled Data, 60 Hz

Air Cooled Systems		with Outdoor Condensing Unit				with Centfifugal Condensing Unit			
		2-ton		3-ton		2-ton		3-ton	
		MM*24E		MM*36E		MM*24E		MM*36E	
		Split System		Split System		Split System		Split System	
Net Capacity Data - BTUH (kw) High Fan Speed									
80 F (26.7 C) DB	Total	25400	(7.4)	37200	(10.9)	23800	(7.0)	34500	(10.1)
50% RH	Sensible	20000	(5.9)	28500	(8.4)	18400	(5.4)	27500	(8.1)
75 F (23.9 C) DB	Total	23700	(6.9)	34700	(10.2)	22100	(6.5)	32100	(9.4)
50% RH	Sensible	19300	(5.7)	27500	(8.1)	17700	(5.2)	26500	(7.8)
72 F (22.2 C) DB	Total	22700	(6.7)	33200	(9.7)	21100	(6.2)	30700	(9.0)
50% RH	Sensible	18800	(5.5)	26900	(7.9)	17300	(5.1)	25900	(7.6)
Net Capacity Data - BTUH (kw) Low Fan Speed									
80 F (26.7 C) DB	Total	25200	(7.4)	36600	(10.7)	24000	(7.0)	33900	(9.9)
50% RH	Sensible	18900	(5.5)	25600	(7.5)	19400	(5.7)	24500	(7.2)
75 F (23.9 C) DB	Total	23600	(6.9)	33900	(9.9)	22200	(6.5)	31500	(9.2)
50% RH	Sensible	18300	(5.4)	24800	(7.3)	18700	(5.5)	23700	(6.9)
72 F (22.2 C) DB	Total	22500	(6.6)	32500	(9.5)	21200	(6.2)	30100	(8.8)
50% RH	Sensible	17900	(5.2)	24300	(7.1)	18200	(5.3)	23300	(6.8)
Fan Data - Direct Drive									
High Speed CFM (CMH)		885	(1504)	1250	(2124)	885	(1504)	1250	(2124)
Low Speed CFM (CMH)		800	(1359)	1000	(1699)	800	(1359)	1000	(1699)
Fan Motor Hp (W)		0.5	(373)	0.5	(373)	0.5	(373)	0.5	(373)
External Static Pressure, in (mm)		0.3	(8)	0.3	(8)	0.3	(8)	0.3	(8)
Evaporator Coil - Copper Tube/Aluminum Fin									
Face Area ft² (m²)		3.1	(0.29)	3.1	(0.29)	3.1	(0.29)	3.1	(0.29)
Coil Rows		3		3		3		3	
Max Face Velocity-fpm (m/s)		277	(1.41)	394	(2.01)	277	(1.41)	394	(2.01)
Electric Reheat Data (Includes Fan Motor)									
Capacity - BTUH (kw) @208V-1ph		16040	(4.7)	16040	(4.7)	16040	(4.7)	16040	(4.7)
Capacity - BTUH (kw) @230V-1ph		19800	(5.8)	19800	(5.8)	19800	(5.8)	19800	(5.8)
Capacity - BTUH (kw) @277V-1ph		21500	(6.3)	21500	(6.3)	21500	(6.3)	21500	(6.3)
Capacity - BTUH (kw) @208V-3ph		n/a	n/a	19100	(5.6)	n/a	n/a	19100	(5.6)
Capacity - BTUH (kw) @230V-3ph		n/a	n/a	23200	(6.8)	n/a	n/a	23200	(6.8)
Capacity - BTUH (kw) @460V-3ph		n/a	n/a	24900	(7.3)	n/a	n/a	24900	(7.3)
SCR Electric Reheat Data (Includes Fan Motor)									
Capacity - BTUH (kw) @208V-1ph		19114	(5.6)	26964	(7.9)	19114	(5.6)	26964	(7.9)
Capacity - BTUH (kw) @230V-1ph		23210	(6.8)	32425	(9.5)	23210	(6.8)	32425	(9.5)
Capacity - BTUH (kw) @277V-1ph		24916	(7.3)	35156	(10.3)	24916	(7.3)	35156	(10.3)
Capacity - BTUH (kw) @208V-3ph		n/a	n/a	26964	(7.9)	n/a	n/a	26964	(7.9)
Capacity - BTUH (kw) @230V-3ph		n/a	n/a	32425	(9.5)	n/a	n/a	32425	(9.5)
Capacity - BTUH (kw) @460V-3ph		n/a	n/a	35156	(10.3)	n/a	n/a	35156	(10.3)
Hot Water Reheat Data (based on 180 F Water 75°F (23.9C) entering air temp)									
Capacity - BTUH (kw)- High Speed		44600	(13.1)	55800	(16.3)	44600	(13.1)	55800	(16.3)
Capacity - BTUH (kw)- Low Speed		42800	(12.5)	51200	(15.0)	42800	(12.5)	51200	(15.0)
Flow Rate - GPM (l/m)		3.0	(11.4)	4.0	(15.1)	3.0	(11.4)	4.0	(15.1)
Pressure Drop - ft (kPa)		0.1	(0.3)	0.1	(0.3)	0.1	(0.3)	0.1	(0.3)
Humidifier Data - Steam Generator Type									
Capacity - lbs/hr (kg/hr)		4.3	(2.0)	4.3	(2.0)	4.3	(2.0)	4.3	(2.0)
Kw		1.5		1.5		1.5		1.5	
Condensing Unit Options: 95 F (35 C) Ambient		**Operation to -30F (-34.4 C) Ambient**				**Operation to -30F (-28.9 C) Ambient**			
Condensing Unit Model Number		**PFC027A**		**PFC037A**		**MC*24A**		**MC*36A**	
Face Area ft² (m²)		4.1	(0.38)	7.7	(0.72)	4.6	(0.43)	4.6	(0.43)
Rows of Coil		2		2		2		3	
CFM (CMH)		2200	(3738)	3000	(5097)	1000	(1699)	1650	(2803)
Motor Hp (W)		0.20	(149)	0.20	(149)	0.33	(246)	0.5	(373)
External Static Pressure, in wg. (mm)		n/a	n/a	n/a	n/a	0.5	(13)	0.5	(13)
Connection Sizes									
Liquid Line - Coupling Female, in.		3/8		3/8		3/8		3/8	
Suction Line - Coupling Female, in.		7/8		7/8		7/8		7/8	
Humidifier Supply, in.		1/4		1/4		1/4		1/4	
Evaporator Drain, in.		3/4		3/4		3/4		3/4	

*specify disconnect or no disconnect

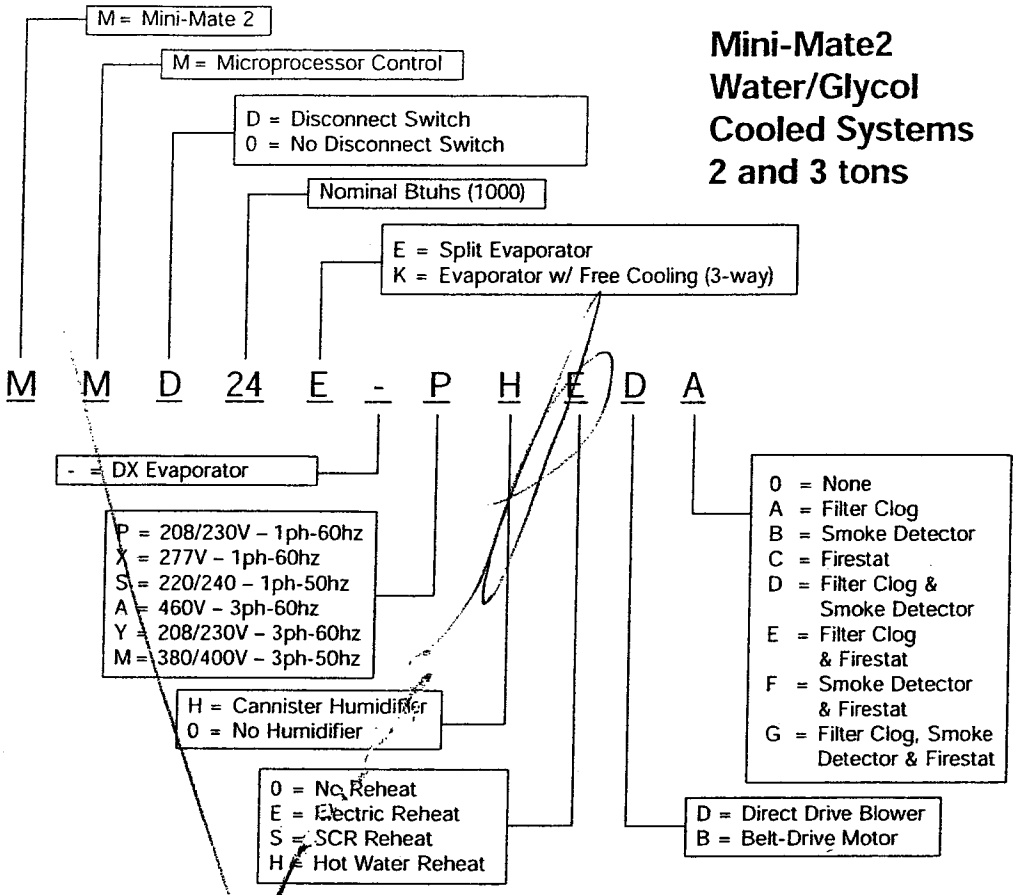
Air Cooled Data, 50 Hz

Air Cooled Systems		with Outdoor Condensing Unit				with Centfifugal Condensing Unit			
		2-ton		3-ton		2-ton		3-ton	
		MM*23E		MM*35E		MM*23E		MM*35E	
		Split System		Split System		Split System		Split System	
Net Capacity Data - BTUH (kw) High Fan Speed									
80 F (26.7 C) DB	Total	23600	(6.9)	34300	(10.0)	22500	(6.6)	32200	(9.4)
50% RH	Sensible	19300	(5.7)	27400	(8.0)	18900	(5.5)	26600	(7.8)
75 F (23.9 C) DB	Total	21900	(6.4)	32000	(9.4)	20800	(6.1)	30000	(8.8)
50% RH	Sensible	18600	(5.4)	26400	(7.7)	18100	(5.3)	25600	(7.5)
72 F (22.2 C) DB	Total	21000	(6.2)	30600	(9.0)	19900	(5.8)	28600	(8.4)
50% RH	Sensible	18100	(5.3)	25800	(7.6)	17700	(5.2)	25000	(7.3)
Net Capacity Data - BTUH (kw) Low Fan Speed									
80 F (26.7 C) DB	Total	23500	(6.9)	33700	(9.9)	22400	(6.6)	31700	(9.3)
50% RH	Sensible	18300	(5.4)	24500	(7.2)	17800	(5.2)	23700	(6.9)
75 F (23.9 C) DB	Total	21800	(6.4)	31400	(9.2)	20600	(6.0)	29500	(8.6)
50% RH	Sensible	17600	(5.2)	23700	(6.9)	17100	(5.0)	22900	(6.7)
72 F (22.2 C) DB	Total	20900	(6.1)	30100	(8.8)	19800	(5.8)	28200	(8.3)
50% RH	Sensible	17200	(5.0)	23200	(6.8)	16700	(4.9)	22400	(6.6)
Fan Data - Direct Drive									
High Speed CFM (CMH)		885	(1504)	1250	(2124)	885	(1504)	1250	(2124)
Low Speed CFM (CMH)		800	(1359)	1000	(1699)	800	(1359)	1000	(1699)
Fan Motor Hp (W)		0.5	(373)	0.5	(373)	0.5	(373)	0.5	(373)
External Static Pressure, in (mm)		0.3	(8)	0.3	(8)	0.3	(8)	0.3	(8)
Evaporator Coil - Copper Tube/Aluminum Fin									
Face Area ft² (m²)		3.1	(0.29)	3.1	(0.29)	3.1	(0.29)	3.1	(0.29)
Coil Rows		3		3		3		3	
Max Face Velocity-fpm (m/s)		277	(1.41)	394	(2.01)	277	(1.41)	394	(2.01)
Electric Reheat Data (Includes Fan Motor)									
Capacity - BTUH (kw) @220V-1ph		18090	(5.3)	18090	(5.3)	18090	(5.3)	18090	(5.3)
Capacity - BTUH (kw) @240V-1ph		21500	(6.3)	21500	(6.3)	21500	(6.3)	21500	(6.3)
Capacity - BTUH (kw) @380V-3ph		24900	(7.3)	24900	(7.3)	24900	(7.3)	24900	(7.3)
SCR Electric Reheat Data (Includes Fan Motor)									
Capacity - BTUH (kw) @220V-1ph		21100	(6.2)	29700	(8.7)	21100	(6.2)	29700	(8.7)
Capacity - BTUH (kw) @240V-1ph		24900	(7.3)	35100	(10.3)	24900	(7.3)	35100	(10.3)
Capacity - BTUH (kw) @380V-3ph		24900	(7.3)	35100	(10.3)	24900	(7.3)	35100	(10.3)
Hot Water Reheat Data (based on 180 F Water 75°F (23.9C) entering air temp)									
Capacity - BTUH (kw)- High Speed		44600	(13.1)	55800	(16.3)	44600	(13.1)	55800	(16.3)
Capacity - BTUH (kw)- Low Speed		42800	(12.5)	51200	(15.0)	42800	(12.5)	51200	(15.0)
Flow Rate - GPM (l/m)		3	(11.4)	4	(15.1)	3	(11.4)	4	(15.1)
Pressure Drop - ft (kPa)		0.1	(0.3)	0.1	(0.3)	0.1	(0.3)	0.1	(0.3)
		Outdoor Propeller Fan				Indoor Centrifugal Fan			
Humidifier Data - Steam Generator Type									
Capacity - lbs/hr (kg/hr)		4.3	(2.0)	4.3	(2.0)	4.3	(2.0)	4.3	(2.0)
Kw		1.5		1.5		1.5		1.5	
Condensing Unit Options: 95 F (35 C) Ambient		**Operation to -30F (-34.4 C) Ambient**				**Operation to -30F (-28.9 C) Ambient**			
Condensing Unit Model Number		**PFC026A**		**PFC036A**		**MC*23A**		**MC*35A**	
Face Area ft² (m²)		4.1	(0.38)	7.7	(0.72)	4.6	(0.43)	4.6	(0.43)
Rows of Coil		2		2		2		3	
CFM (CMH)		2200	(3738)	3000	(5097)	1000	(1699)	1650	(2803)
Motor Hp (W)		0.20	(149)	0.20	(149)	0.33	(246)	0.5	(373)
External Static Pressure, in wg. (mm)		n/a	n/a	n/a	n/a	0.5	13	0.5	13
Connection Sizes									
Liquid Line - Coupling Female, in.		3/8		3/8		3/8		3/8	
Suction Line - Coupling Female, in.		7/8		7/8		7/8		7/8	
Humidifier Supply, in.		1/4		1/4		1/4		1/4	
Evaporator Drain, in.		3/4		3/4		3/4		3/4	

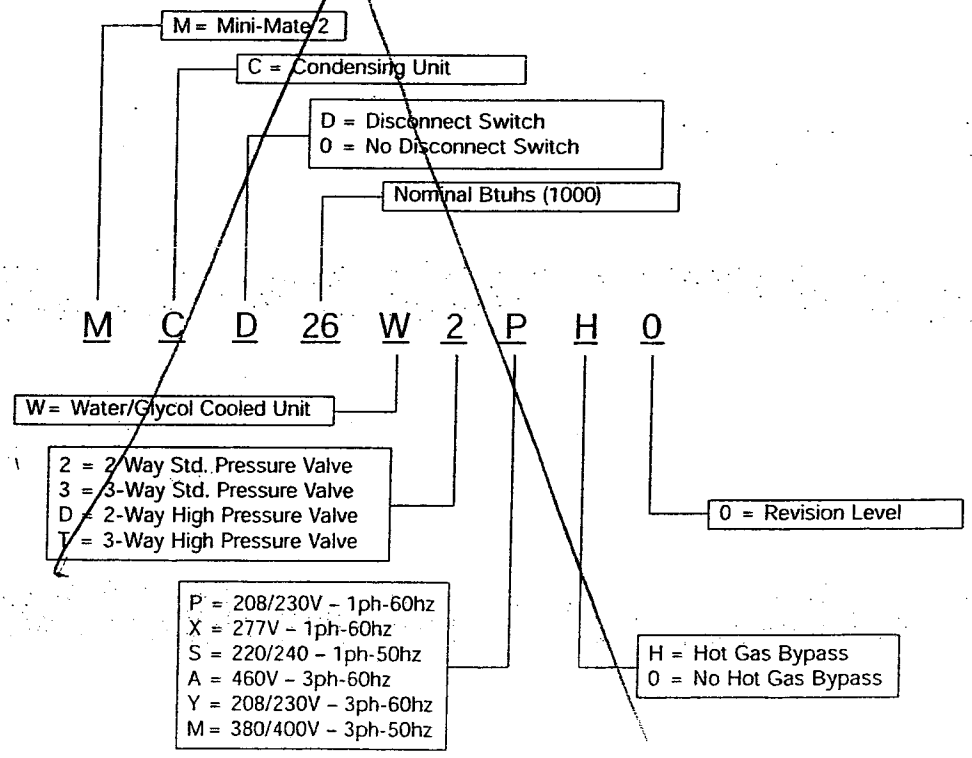
*specify disconnect or no disconnect

Evaporators

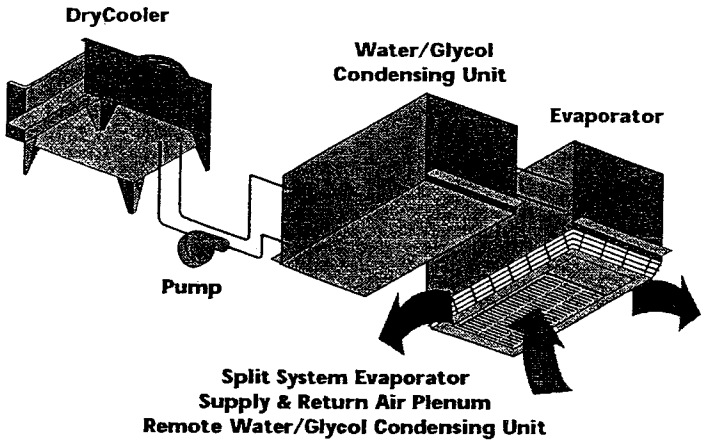
Mini-Mate2 Water/Glycol Cooled Systems 2 and 3 tons

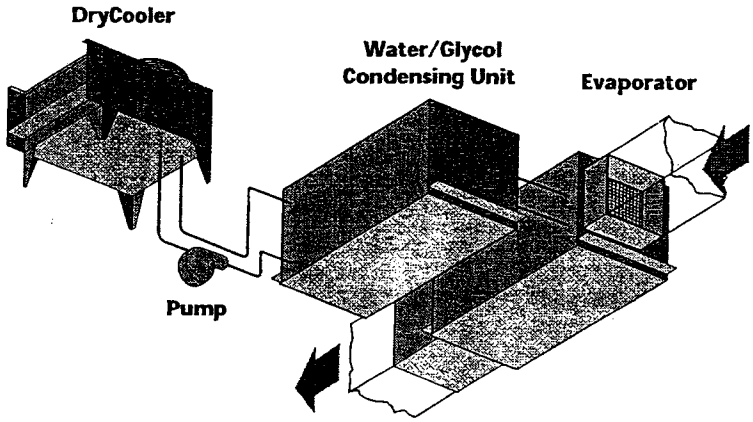


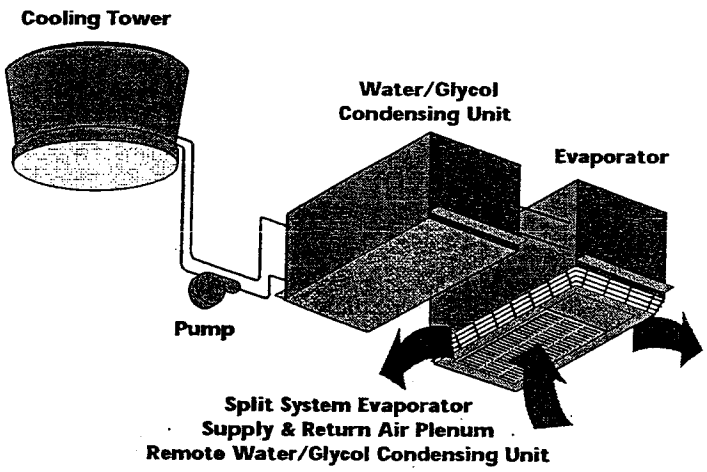
Water Cooled Condensing Units



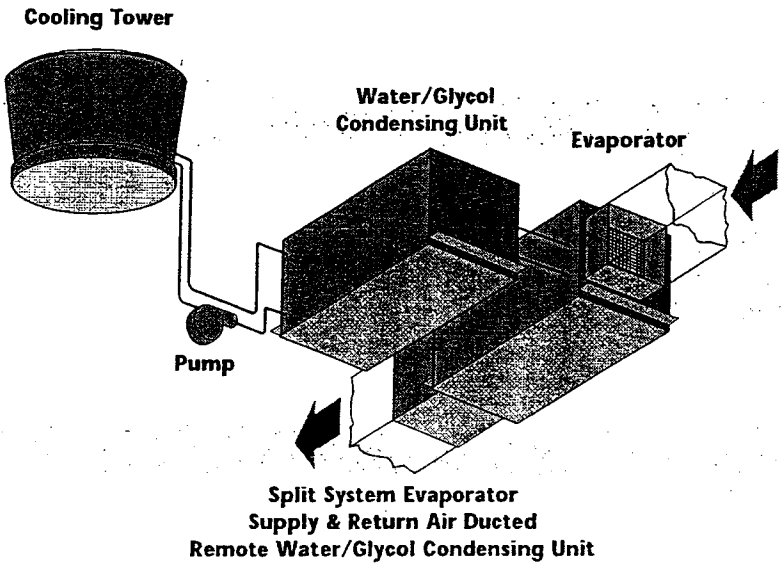
Mini-Mate2 Water/Glycol Cooled Systems 2 and 3 tons



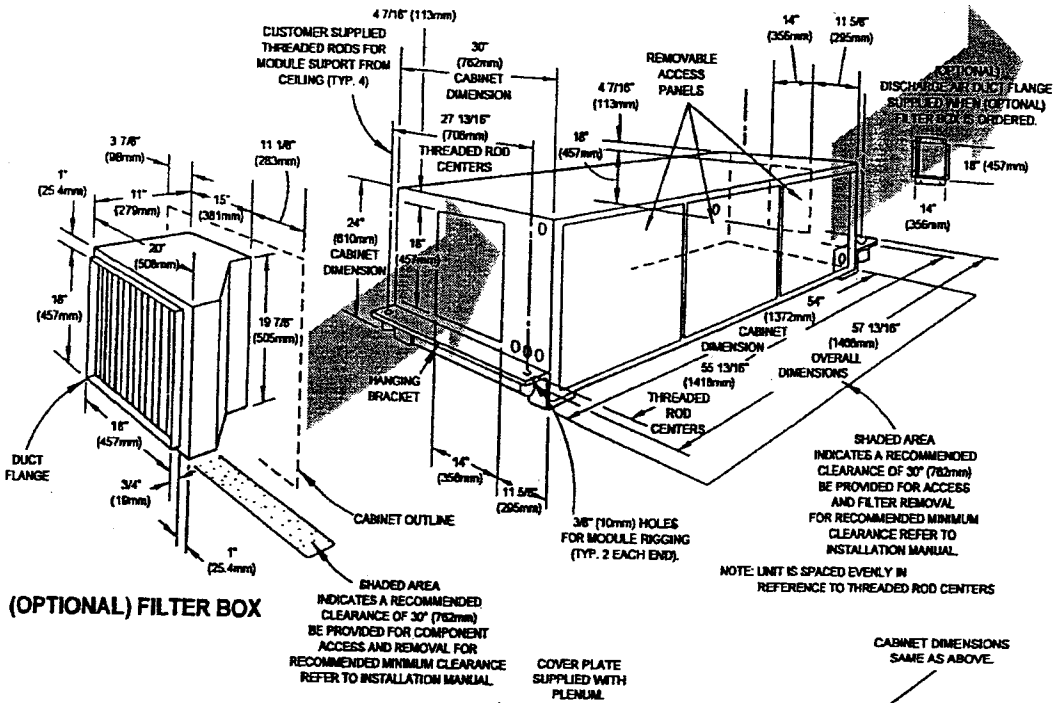




Note: All split systems may be close-coupled or configured with condensing unit located remotely from the evaporator.



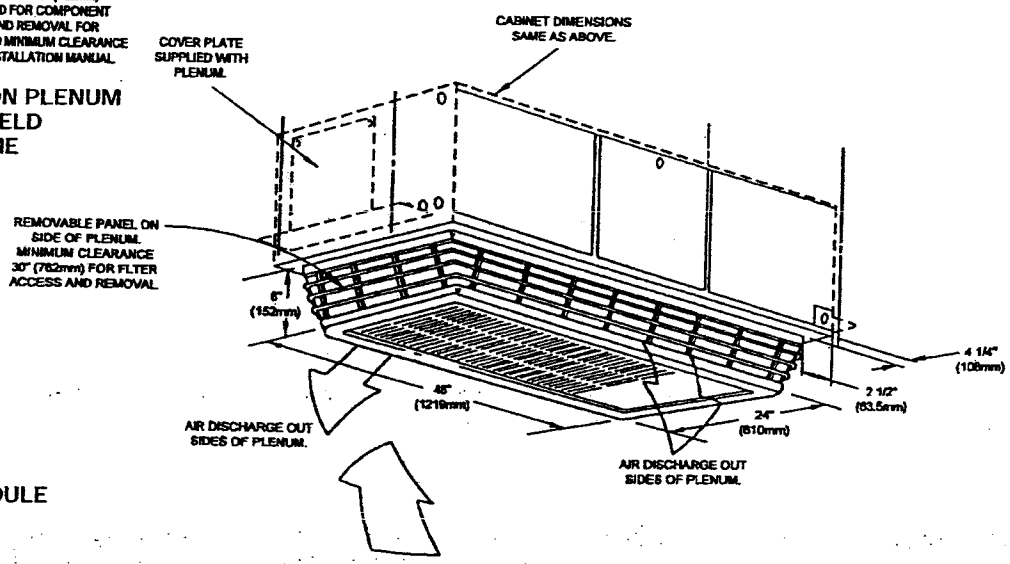
2-ton and 3-ton Mini-Mate2, Water/Glycol Cooled Systems
Unit Dimensional Data



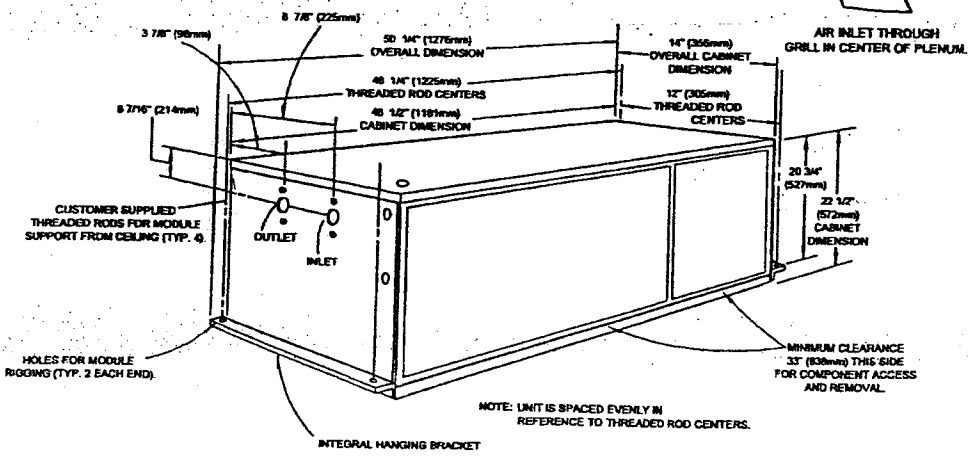
FAN/COIL MODULE DIMENSIONAL DATA

(OPTIONAL) FILTER BOX

(OPTIONAL) AIR DISTRIBUTION PLENUM ALL PIPING & ELECTRICAL FIELD CONNECTIONS ARE THE SAME



INDOOR CONDENSING MODULE CABINET & PIPING DATA



Water/Glycol Data, 60 Hz

Water Cooled and Glycol Cooled		2-ton		3-ton		2-ton		3-ton	
		WATER COOLED		WATER COOLED		GLYCOL COOLED		GLYCOL COOLED	
		MM*24E		MM*36E		MM*24E		MM*36E	
Net Capacity Data - BTUH (kw) High Fan Speed									
80 F (26.7 C) DB	Total	26400	(7.7)	37900	(11.1)	22900	(6.7)	34700	(10.2)
50% RH	Sensible	20400	(6.0)	28800	(8.4)	19100	(5.6)	27600	(8.1)
75 F (23.9 C) DB	Total	24500	(7.2)	35000	(10.3)	21400	(6.3)	32200	(9.4)
50% RH	Sensible	19600	(5.7)	27700	(8.1)	18300	(5.4)	26600	(7.8)
72 F (22.2 C) DB	Total	23300	(6.8)	33400	(9.8)	20500	(6.0)	30800	(9.0)
50% RH	Sensible	19100	(5.6)	27000	(7.9)	17900	(5.2)	25900	(7.6)
Net Capacity Data - BTUH (kw) Low Fan Speed									
80 F (26.7 C) DB	Total	26200	(7.7)	37100	(10.9)	22800	(6.7)	34000	(10.0)
50% RH	Sensible	19300	(5.7)	25800	(7.6)	18000	(5.3)	24600	(7.2)
75 F (23.9 C) DB	Total	24200	(7.1)	34200	(10.0)	21200	(6.2)	31700	(9.3)
50% RH	Sensible	18600	(5.4)	24900	(7.3)	17400	(5.1)	23800	(7.0)
72 F (22.2 C) DB	Total	23100	(6.8)	32600	(9.6)	20400	(6.0)	30300	(8.9)
50% RH	Sensible	18200	(5.3)	24400	(7.1)	17000	(5.0)	23300	(6.8)
Fan Data - Direct Drive									
High Speed CFM (CMH)		885	(1504)	885	(1504)	1250	(2124)	1250	(2124)
Low Speed CFM (CMH)		800	(1359)	800	(1359)	1000	(1699)	1000	(1699)
Fan Motor Hp (W)		0.5	(373)	0.5	(373)	0.5	(373)	0.5	(373)
External Static Pressure, in (mm)		0.3	(8)	0.3	(8)	0.3	(8)	0.3	(8)
Evaporator Coil - Copper Tube/Aluminum Fin									
Face Area ft^2 (m^2)		3.1	(0.3)	3.1	(0.3)	3.1	(0.3)	3.1	(0.3)
Coil Rows		3		3		3		3	
Max Face Velocity-fpm (m/s)		277	(1.4)	277	(1.4)	396	(2.0)	396	(2.0)
Electric Reheat Data (Includes Fan Motor)									
Capacity - BTUH (kw) @208V-1ph		16040	(4.7)	16040	(4.7)	16040	(4.7)	16040	(4.7)
Capacity - BTUH (kw) @230V-1ph		19800	(5.8)	19800	(5.8)	19800	(5.8)	19800	(5.8)
Capacity - BTUH (kw) @277V-1ph		21500	(6.3)	21500	(6.3)	21500	(6.3)	21500	(6.3)
Capacity - BTUH (kw) @208V-3ph		n/a	n/a	n/a	n/a	19100	(5.6)	19100	(5.6)
Capacity - BTUH (kw) @230V-3ph		n/a	n/a	n/a	n/a	23200	(6.8)	23200	(6.8)
Capacity - BTUH (kw) @460V-3ph		n/a	n/a	n/a	n/a	24900	(7.3)	24900	(7.3)
SCR Electric Reheat Data (includes Fan Motor)									
Capacity - BTUH (kw) @208V-1ph		19114	(5.6)	19114	(5.6)	26964	(7.9)	26964	(7.9)
Capacity - BTUH (kw) @230V-1ph		23210	(6.8)	23210	(6.8)	32425	(9.5)	32425	(9.5)
Capacity - BTUH (kw) @277V-1ph		24916	(7.3)	24916	(7.3)	35156	(10.3)	35156	(10.3)
Capacity - BTUH (kw) @208V-3ph		n/a	n/a	n/a	n/a	26964	(7.9)	26964	(7.9)
Capacity - BTUH (kw) @230V-3ph		n/a	n/a	n/a	n/a	32425	(9.5)	32425	(9.5)
Capacity - BTUH (kw) @460V-3ph		n/a	n/a	n/a	n/a	35156	(10.3)	35156	(10.3)
Hot Water Reheat Data (based on 180 F Water 75°F (23.9C) entering air temp)									
Capacity - BTUH (kw)- High Speed		44600	(13.1)	44600	(13.1)	55800	(16.3)	55800	(16.3)
Capacity - BTUH (kw)- Low Speed		42800	(12.5)	42800	(12.5)	51200	(15.0)	51200	(15.0)
Flow Rate - GPM (l/m)		3	(11.4)	3	(11.4)	4	(15.1)	4	(15.1)
Pressure Drop - ft (kPa)		0.1	(0.3)	0.1	(0.3)	0.1	(0.3)	0.1	(0.3)
Humidifier Data - Steam Generator Type									
Capacity - lbs/hr (kg/hr)		4.3	(2.0)	4.3	(2.0)	4.3	(2.0)	4.3	(2.0)
Kw		1.5		1.5		1.5		1.5	
Water and Glycol Condensing Unit Options									
Condensing Unit Model Number		**MC*26W**		**MC*38W**		**MC*26W**		**MC*38W**	
Condenser Water Requirements - 85°F EWT (29.4°C), 105°F (40.6°C) Condensing Temp									
THR - BTU/H (Kw) @ 75°F/50%		30800	(9.02)	44500	(13.0)	N/A	N/A	N/A	N/A
Flow Rate - gpm (l/m)		7.90	(29.9)	6.5	(24.6)	N/A	N/A	N/A	N/A
Pressure drop - psi (kPa)		4.1	(12.1)	2.8	(8.4)	N/A	N/A	N/A	N/A
Condenser Glycol Requirements - 110 F EGT (43.3 C) - 40%									
Flow Rate - GPM (l/m)		N/A	N/A	N/A	N/A	9	(34.1)	12.0	(45.4)
Pressure Drop - ft. (kPa)		N/A	N/A	N/A	N/A	16	(47.7)	25.0	(74.6)
Condener Connection Size		N/A	N/A	N/A	N/A	3/4 FPT		3/4 FPT	
Unit Volume Gal. (L)		N/A	N/A	N/A	N/A	1.2	(4.5)	1.2	(4.5)
Connection Sizes									
Condenser Connection Size, in.		3/4 FPT		3/4 FPT		N/A	N/A	N/A	N/A
Humidifier Supply, in.		1/4		1/4		1/4		1/4	
Evaporator Drain, in.		3/4		3/4		3/4		3/4	

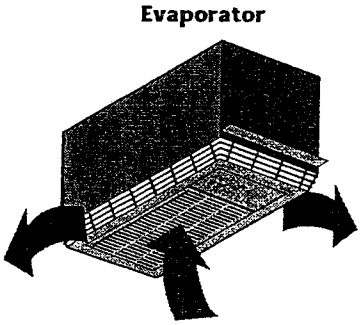
*specify disconnect or no disconnect

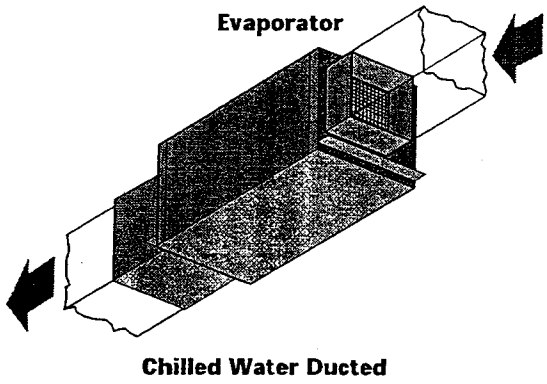
Water/Glycol Data, 50 Hz

Water Cooled and Glycol Cooled		2-ton		3-ton		2-ton		3-tons	
		WATER COOLED		WATER COOLED		GLYCOL COOLED		GLYCOL COOLED	
		MM*23E		MM*35E		MM*23E		MM*35E	
Net Capacity Data - BTUH (kw) High Fan Speed									
80 F (26.7 C) DB	Total	24200	(7.1)	34500	(10.1)	21300	(6.2)	32200	(9.4)
50% RH	Sensible	19500	(5.7)	27500	(8.1)	18400	(5.4)	26600	(7.8)
75 F (23.9 C) DB	Total	22300	(6.5)	31900	(9.3)	19800	(5.8)	30000	(8.8)
50% RH	Sensible	18700	(5.5)	26400	(7.7)	17700	(5.2)	25600	(7.5)
72 F (22.2 C) DB	Total	21200	(6.2)	30400	(8.9)	19000	(5.6)	28600	(8.4)
50% RH	Sensible	18200	(5.3)	25700	(7.5)	17300	(5.1)	25000	(7.3)
Net Capacity Data - BTUH (kw) Low Fan Speed									
80 F (26.7 C) DB	Total	24000	(7.0)	33800	(9.9)	21200	(6.2)	31700	(9.3)
50% RH	Sensible	18500	(5.4)	24500	(7.2)	17400	(5.1)	23700	(6.9)
75 F (23.9 C) DB	Total	22100	(6.5)	31200	(9.1)	19700	(5.8)	29400	(8.6)
50% RH	Sensible	17700	(5.2)	23600	(6.9)	16700	(4.9)	22900	(6.7)
72 F (22.2 C) DB	Total	21100	(6.2)	29800	(8.7)	18900	(5.5)	28200	(8.3)
50% RH	Sensible	17300	(5.1)	23100	(6.8)	16400	(4.8)	22400	(6.6)
Fan Data - Direct Drive									
High Speed CFM (CMH)		885	(1504)	885	(1504)	1250	(2124)	1250	(2124)
Low Speed CFM (CMH)		800	(1359)	800	(1359)	1000	(1699)	1000	(1699)
Fan Motor Hp (W)		0.5	(373)	0.5	(373)	0.5	(373)	0.5	(373)
External Static Pressure, in (mm)		0.3	(8)	0.3	(8)	0.3	(8)	0.3	(8)
Evaporator Coil - Copper Tube/Aluminum Fin									
Face Area ft^2 (m^2)		3.1	(0.3)	3.1	(0.3)	3.1	(0.3)	3.1	(0.3)
Coil Rows		3		3		3		3	
Max Face Velocity-fpm (m/s)		277	(1.4)	277	(1.4)	396	(2.0)	396	(2.0)
Electric Reheat Data (Includes Fan Motor)									
Capacity - BTUH (kw) @220V-1ph		18090	(5.3)	18090	(5.3)	18090	(5.3)	18090	(5.3)
Capacity - BTUH (kw) @240V-1ph		21500	(6.3)	21500	(6.3)	21500	(6.3)	21500	(6.3)
Capacity - BTUH (kw) @380V-3ph		24900	(7.3)	24900	(7.3)	24900	(7.3)	24900	(7.3)
SCR Electric Reheat Data (Includes Fan Motor)									
Capacity - BTUH (kw) @220V-1ph		21100	(6.2)	21100	(6.2)	29700	(8.7)	29700	(8.7)
Capacity - BTUH (kw) @240V-1ph		24900	(7.3)	24900	(7.3)	35100	(10.3)	35100	(10.3)
Capacity - BTUH (kw) @380V-3ph		24900	(7.3)	24900	(7.3)	35100	(10.3)	35100	(10.3)
Hot Water Reheat Data (based on 180 F Water 75°F (23.9C) entering air temp)									
Capacity - BTUH (kw)- High Speed		44600	(13.1)	44600	(13.1)	55800	(16.3)	55800	(16.3)
Capacity - BTUH (kw)- Low Speed		42800	(12.5)	42800	(12.5)	51200	(15.0)	51200	(15.0)
Flow Rate - GPM (l/m)		3	(11.4)	3	(11.4)	4	(15.1)	4	(15.1)
Pressure Drop - ft (kPa)		0.1	(0.3)	0.1	(0.3)	0.1	(0.3)	0.1	(0.3)
Humidifier Data - Steam Generator Type									
Capacity - lbs/hr (kg/hr)		4.3	(2.0)	4.3	(2.0)	4.3	(2.0)	4.3	(2.0)
Kw		1.5		1.5		1.5		1.5	
Water and Glycol Condensing Unit Options									
Condensing Unit Model Number		MC*25W		MC*37W		MC*25W		MC*37W	
Condenser Water Requirements - 85°F EWT (29.4°C), 105°F (40.6°C) Condensing Temp									
THR - BTU/H (Kw) @ 75°F/50%		2890	(8.5)	41800	(12.2)	N/A	N/A	N/A	N/A
Flow Rate - gpm (l/m)		5.5	(20.8)	3.6	(13.6)	N/A	N/A	N/A	N/A
Pressure drop - psi (kPa)		2.0	(6.0)	1.0	(3.0)	N/A	N/A	N/A	N/A
Condenser Connection Size		3/4 FPT		3/4 FPT		N/A	N/A	N/A	N/A
Condenser Glycol Requirements - 110 F EGT (43.3 C) - 40%									
Flow Rate - GPM (l/m)		N/A	N/A	N/A	N/A	9.0	(34.1)	12.0	(45.4)
Pressure Drop - ft. (kPa)		N/A	N/A	N/A	N/A	16.0	(47.7)	25.0	(74.6)
Unit Volume Gal. (L)		N/A	N/A	N/A	N/A	1.2	(4.5)	1.2	(4.5)
Connection Sizes									
Condenser Connection Size, in.		3/4 FPT		3/4 FPT		N/A	N/A	N/A	N/A
Humidifier Supply, in.		1/4		1/4		1/4		1/4	
Evaporator Drain, in.		3/4		3/4			3/4		3/4

*specify disconnect or no disconnect

Mini-Mate2
Chilled Water Systems
3 tons





M = Mini-Mate2

M = Microprocessor Control

D = Disconnect Switch
0 = No Disconnect Switch

Nominal Btuhs (1000)

C = Chilled Water

M M D 40 C 2 P H E D A

2 = 2-Way Std. Closeoff Pressure Valve (CW)
3 = 3-Way Valve (CW)

P = 208/230V – 1ph-60hz
X = 277V – 1ph-60hz
S = 220/240 – 1ph-50hz
A = 460V – 3ph-60hz
Y = 208/230V – 3ph-60hz
M = 380/400V – 3ph-50hz

H = Cannister Humidifier
0 = No Humidifier

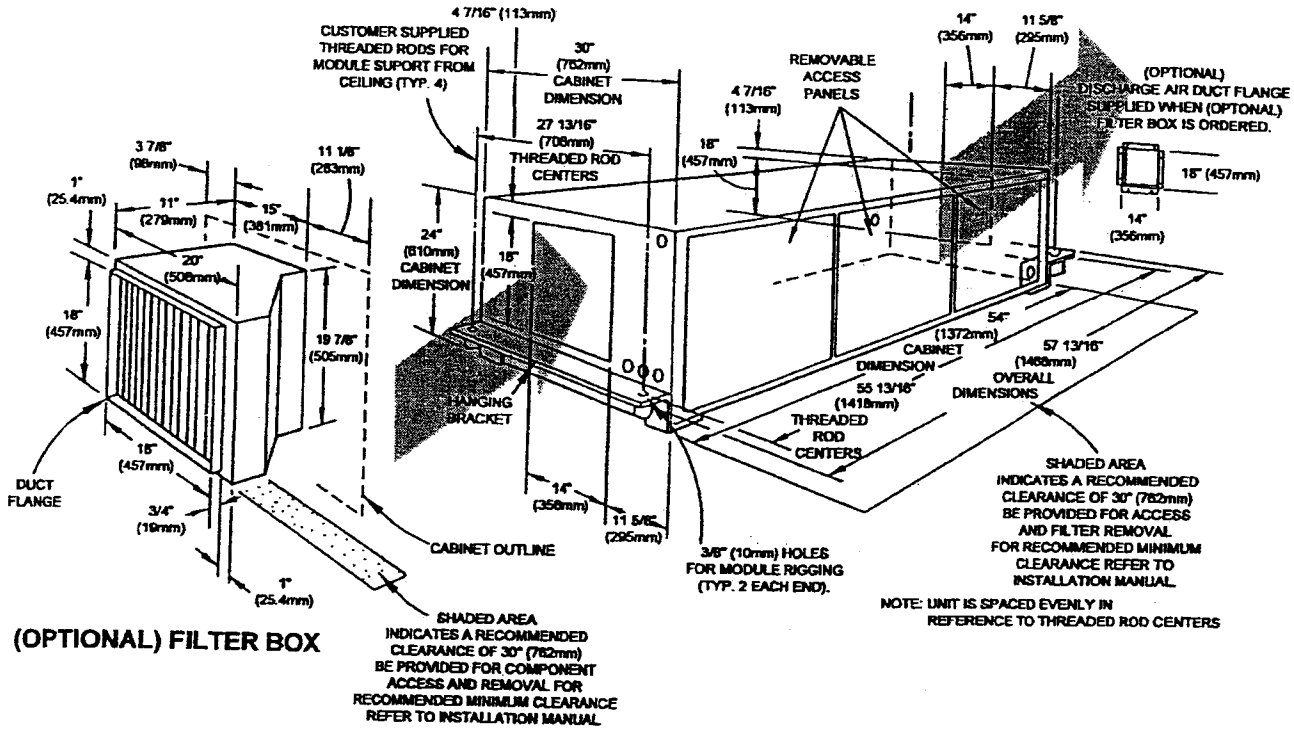
0 = No Reheat
E = Electric Reheat
S = SCR Reheat
H = Hot Water Reheat

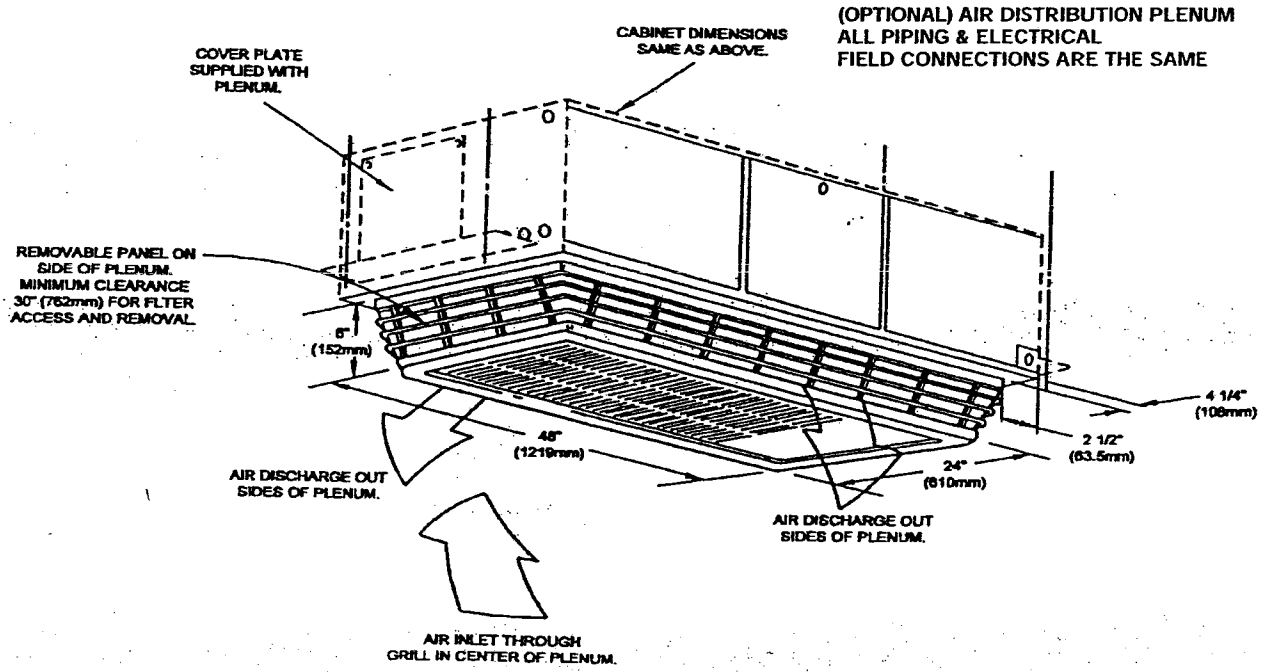
D = Direct Drive Blower
B = Belt-Drive Motor

0 = None
A = Filter Clog
B = Smoke Detector
C = Firestat
D = Filter Clog & Smoke Detector
E = Filter Clog & Firestat
F = Smoke Detector & Firestat
G = Filter Clog, Smoke Detector & Firestat

3-ton Mini-Mate2, Chilled Water System
Unit Dimensional Data

FAN/COIL MODULE





Chilled Water Data, 60 Hz

		3-ton CHILLED WATER MM*40C	
Capacity Data - BTUH (kw) High Fan Speed			(metric)
80 F (26.7 C) DB	Total	42660	(12.5)
50% RH	Sensible	32070	(9.4)
Flow Rate - GPM (l/m)		8.5	(32.2)
Pressure Drop - PSI (kPa)		11.1	(76.5)
75 F (23.9 C) DB	Total	30085	(8.8)
50% RH	Sensible	27305	(8.0)
Flow Rate - GPM (l/m)		6	(22.7)
Pressure Drop - PSI (kPa)		5.7	(39.3)
72 F (22.2 C) DB	Total	25040	(7.3)
50% RH	Sensible	24315	(7.1)
Flow Rate - GPM (l/m)		5	(18.9)
Pressure Drop - PSI (kPa)		4.0	(27.6)
Capacity Data - BTUH (kw) Low Fan Speed			
80 F (26.7 C) DB	Total	36080	(10.6)
50% RH	Sensible	26425	(7.7)
Flow Rate - GPM (l/m)		7.2	(27.3)
Pressure Drop - PSI (kPa)		7.9	(54.5)
75 F (23.9 C) DB	Total	25315	(7.4)
50% RH	Sensible	22445	(6.6)
Flow Rate - GPM (l/m)		5	(18.9)
Pressure Drop - PSI (kPa)		4.0	(27.6)
72 F (22.2 C) DB	Total	20985	(6.1)
50% RH	Sensible	20130	(5.9)
Flow Rate - GPM (l/m)		4.2	(15.9)
Pressure Drop - PSI (kPa)		2.9	(20.0)
Fan Data - Direct Drive			
High Speed CFM (CMH)		1250	(2124)
Low Speed CFM (CMH)		1000	(1699)
Fan Motor Hp (W)		0.5	(0.4)
External Static Pressure, in (mm)		0.3	(8)
Evaporator Coil - Copper Tube/Aluminum Fin			
Face Area ft² (m²)		3.1	(0.3)
Coil Rows		3	
Max Face Velocity-fpm (m/s)		391	(2.0)
Electric Reheat Data (Includes Fan Motor)			
Capacity - BTUH (kw) @208V-1ph		16040	(4.7)
Capacity - BTUH (kw) @230V-1ph		19800	(5.8)
Capacity - BTUH (kw) @277V-1ph		21500	(6.3)
Capacity - BTUH (kw) @208V-3ph		19100	(5.6)
Capacity - BTUH (kw) @230V-3ph		23200	(6.8)
Capacity - BTUH (kw) @460V-3ph		24900	(7.3)
SCR Electric Reheat Data (Includes Fan Motor)			
Capacity - BTUH (kw) @208V-1ph		26964	(7.9)
Capacity - BTUH (kw) @230V-1ph		32425	(9.5)
Capacity - BTUH (kw) @277V-1ph		35156	(10.3)
Capacity - BTUH (kw) @208V-3ph		26964	(7.9)
Capacity - BTUH (kw) @230V-3ph		32425	(9.5)
Capacity - BTUH (kw) @460V-3ph		35156	(10.3)
Hot Water Reheat Data (based on 180 F Water)			
Capacity - BTUH (kw)- High Speed		55800	(16.3)
Capacity - BTUH (kw)- Low Speed		51200	(15.0)
Flow Rate - GPM (l/m)		4	(15.1)
Pressure Drop - ft (kPa)		0.1	(0.3)
Humidifier Data - Steam Generator Type			
Capacity - lbs/hr (kg/hr)		4.3	(2.0)
Kw		1.5	
Connection Sizes			
Chilled Water Supply and Return, NPT Female		3/4	
Humidifier Supply, in.		1/4	
Evaporator Drain, in.		3/4	

Chilled Water Data, 50 Hz

		3-ton CHILLED WATER MM*40C	
Capacity Data - BTUH (kw) High Fan Speed			(metric)
80 F (26.7 C) DB	Total	42660	12.5
50% RH	Sensible	32070	9.4
Flow Rate - GPM (l/m)		8.5	32.2
Pressure Drop - PSI (kPa)		11.1	76.5
75 F (23.9 C) DB	Total	30085	8.8
50% RH	Sensible	27305	8.0
Flow Rate - GPM (l/m)		6	22.7
Pressure Drop - PSI (kPa)		5.7	39.3
72 F (22.2 C) DB	Total	25040	7.3
50% RH	Sensible	24315	7.1
Flow Rate - GPM (l/m)		5	18.9
Pressure Drop - PSI (kPa)		4.0	27.6
Capacity Data - BTUH (kw) Low Fan Speed			
80 F (26.7 C) DB	Total	36080	10.6
50% RH	Sensible	26425	7.7
Flow Rate - GPM (l/m)		7.2	27.3
Pressure Drop - PSI (kPa)		7.9	54.5
75 F (23.9 C) DB	Total	25315	7.4
50% RH	Sensible	22445	6.6
Flow Rate - GPM (l/m)		5	18.9
Pressure Drop - PSI (kPa)		4.0	27.6
72 F (22.2 C) DB	Total	20985	6.1
50% RH	Sensible	20130	5.9
Flow Rate - GPM (l/m)		4.2	15.9
Pressure Drop - PSI (kPa)		2.9	20.0
Fan Data - Direct Drive			
High Speed CFM (CMH)		1250	2124
Low Speed CFM (CMH)		1000	1699
Fan Motor Hp (W)		0.5	0.37
External Static Pressure, in (mm)		0.3	8
Evaporator Coil - Copper Tube/Aluminum Fin			
Face Area ft² (m²)		3.07	0.29
Coil Rows		3	
Max Face Velocity-fpm (m/s)		391	1.99
Electric Reheat Data (Includes Fan Motor)			
Capacity - BTUH (kw) @220V-1ph		18090	5.3
Capacity - BTUH (kw) @240V-1ph		21500	6.3
Capacity - BTUH (kw) @380V-3ph		24900	7.3
SCR Electric Reheat Data (Includes Fan Motor)			
Capacity - BTUH (kw) @220V-1ph		29700	8.7
Capacity - BTUH (kw) @240V-1ph		35100	10.3
Capacity - BTUH (kw) @380V-3ph		35100	10.3
Hot Water Reheat Data (based on 180 F Water)			
Capacity - BTUH (kw)- High Speed		55800	16.3
Capacity - BTUH (kw)- Low Speed		51200	15.0
Flow Rate - GPM (l/m)		4	15.1
Pressure Drop - ft (kPa)		0.1	0.3
Humidifier Data - Steam Generator Type			
Capacity - lbs/hr (kg/hr)		4.3	2.0
Kw		1.5	
Connection Sizes			
Chilled Water Supply and Return, NPT Female		3/4	
Humidifier Supply, in.		1/4	
Evaporator Drain, in.		3/4	

*specify disconnect or no disconnect

Evaporator Electrical Data, 60 Hz

	Direct Drive							
	208/230-1 Ph-60hz		277-1 Ph-60hz		208/230-3 Ph-60hz		460-3 Ph-60hz	
Base Evaporator Model Number	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E
Cooling Only								
FLA	2.8	2.8	2.3	2.3	n/a	2.8	n/a	1.4
WSA	3.5	3.5	2.9	2.9	n/a	3.5	n/a	1.8
OPD	15	15	15	15	n/a	15	n/a	15
with Electric Reheat								
FLA	27.8	27.8	24.0	24.0	n/a	19.6	n/a	9.8
WSA	34.8	34.8	30.0	30.0	n/a	24.5	n/a	12.3
OPD	35	35	35	35	n/a	25	n/a	15
with SCR Reheat								
FLA	32	44.5	27.6	38.4	n/a	26.9	n/a	13.5
WSA	40	55.6	34.5	48	n/a	33.6	n/a	16.9
OPD	45	60	35	50	n/a	35	n/a	20
with Humidifier								
FLA	9.2	9.2	8.0	8.0	n/a	9.2	n/a	4.8
WSA	11.5	11.5	10.0	10.0	n/a	11.5	n/a	6.0
OPD	15	15	15	15	n/a	15	n/a	15
with Electric Reheat and Humidifier								
FLA	34.2	34.2	29.7	29.7	n/a	26.0	n/a	13.2
WSA	42.8	42.8	37.1	37.1	n/a	32.5	n/a	16.5
OPD	45	45	40	40	n/a	35	n/a	20
with SCR Reheat and Humidifier								
FLA	38.4	50.9	33.3	44.1	n/a	33.3	n/a	16.9
WSA	48	63.6	41.6	55.1	n/a	41.6	n/a	21.1
OPD	50	70	45	60	n/a	45	n/a	25

	Belt Drive							
	208/230-1 Ph-60hz		277-1 Ph-60hz		208/230-3 Ph-60hz		460-3 Ph-60hz	
Base Model Number	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E
Cooling Only								
FLA	8.5	8.5	7.0	7.0	n/a	4.2	n/a	2.1
WSA	10.6	10.6	8.8	8.8	n/a	5.3	n/a	2.6
OPD	15	15	15	15	n/a	15	n/a	15
with Electric Reheat								
FLA	33.5	33.5	28.7	28.7	n/a	21.0	n/a	10.5
WSA	41.9	41.9	35.9	35.9	n/a	26.3	n/a	13.1
OPD	45	45	40	40	n/a	30	n/a	15
with SCR Reheat								
FLA	37.7	50.2	32.3	43.1	n/a	28.3	n/a	14.2
WSA	47.1	62.8	40.4	53.9	n/a	35.4	n/a	17.8
OPD	50	70	45	60	n/a	40	n/a	20
with Humidifier								
FLA	14.9	14.9	12.7	12.7	n/a	10.6	n/a	5.5
WSA	18.6	18.6	15.9	15.9	n/a	13.3	n/a	6.9
OPD	25	25	20	20	n/a	15	n/a	15
with Electric Reheat and Humidifier								
FLA	39.9	39.9	34.4	34.4	n/a	27.4	n/a	13.9
WSA	49.9	49.9	43.0	43.0	n/a	34.3	n/a	17.4
OPD	50	50	45	45	n/a	35	n/a	20
with SCR Reheat and Humidifier								
FLA	44.1	56.6	38.0	48.8	n/a	34.7	n/a	17.6
WSA	55.1	70.8	47.5	61.0	n/a	43.4	n/a	22.0
OPD	60	80	50	70	n/a	45	n/a	25

*specify disconnect or no disconnect

Notes:

1. Use MM*36E electrical data for MM*40C chilled water units.
2. Use "no reheat" category for units with Hot Water Reheat.
3. Belt drive data includes externally mounted high static blower box.

Evaporator Electrical Data, 50 Hz

	Direct Drive			
	220/240-1 Ph-50hz		380/400-3 Ph-60hz	
Base Evaporator Model Number	**MM*23E**	**MM*35E**	**MM*23E**	**MM*35E**
Cooling Only				
FLA	2.5	2.5	1.7	1.7
WSA	3.1	3.1	2.1	2.1
with Electric Reheat				
FLA	27.5	27.5	11.4	11.4
WSA	34.4	34.4	14.3	14.3
with SCR Reheat				
FLA	31.7	44.2	11.4	15.6
WSA	39.6	55.3	14.3	19.5
with Humidifier				
FLA	8.9	8.9	5.4	5.4
WSA	11.1	11.1	6.8	6.8
with Electric Reheat and Humidifier				
FLA	33.9	33.9	15.1	15.1
WSA	42.4	42.4	18.9	18.9
with SCR Reheat and Humidifier				
FLA	38.1	50.6	15.1	19.3
WSA	47.6	63.3	18.9	24.1

	Belt Drive			
	220/220-1 Ph-50hz		380/400-3 Ph-60hz	
Base Model Number	**MM*23E**	**MM*35E**	**MM*23E**	**MM*35E**
Cooling Only				
FLA	8.5	8.5	2.1	2.1
WSA	10.6	10.6	2.6	2.6
with Electric Reheat				
FLA	33.5	33.5	11.8	11.8
WSA	41.9	41.9	14.8	14.8
with SCR Reheat				
FLA	37.7	50.2	11.8	16.0
WSA	47.1	62.8	14.8	20.0
with Humidifier				
FLA	14.9	14.9	5.8	5.8
WSA	18.6	18.6	7.3	7.3
with Electric Reheat and Humidifier				
FLA	39.9	39.9	15.5	5.5
WSA	49.9	49.9	19.4	19.4
with SCR Reheat and Humidifier				
FLA	44.1	56.6	15.5	19.7
WSA	55.1	70.8	19.4	24.6

*specify disconnect or no disconnect

Notes:

1. Use MM*35E electrical data for MM*39C chilled water units
2. Use "no reheat" category for units with Hot Water Reheat
3. Belt drive data includes externally mounted high static blower box

Split System Air Cooled Electrical Data, 60 Hz with Single-Point Power Kit

Direct Drive								
	208/230-1 Ph-60hz		277-1 Ph-60hz		208/230-3 Ph-60hz		460-3 Ph-60hz	
Base Evaporator Model Number	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E
	MC*24A	MC*36A	MC*24A	MC*36A	MC*24A	MC*36A	MC*24A	MC*36A
Cooling Only								
FLA	16.5	24.4	14.2	18.9	n/a	17.9	n/a	8.5
WSA	19.4	28.9	16.6	22.5	n/a	20.8	n/a	9.9
OPD	30	45	25	35	n/a	30	n/a	15
with Electric Reheat								
FLA	41.5	49.4	35.9	40.6	n/a	34.7	n/a	16.9
WSA	50.6	60.1	43.7	49.6	n/a	41.8	n/a	20.1
OPD	60	70	45	50	n/a	45	n/a	25
with SCR Reheat								
FLA	45.7	66.1	39.5	55.0	n/a	42.0	n/a	20.6
WSA	55.9	81.0	48.2	67.6	n/a	50.9	n/a	25.1
OPD	60	90	50	70	n/a	60	n/a	30
with Humidifier								
FLA	22.9	30.8	19.9	24.6	n/a	24.3	n/a	11.9
WSA	25.8	35.3	22.3	28.2	n/a	27.2	n/a	13.3
OPD	35	50	30	40	n/a	35	n/a	15
with Electric Reheat and Humidifier								
FLA	41.5	49.4	35.9	40.6	n/a	34.7	n/a	16.9
WSA	50.6	60.1	43.7	49.6	n/a	41.8	n/a	20.4
OPD	60	70	45	50	n/a	45	n/a	25
with SCR Reheat and Humidifier								
FLA	52.1	72.5	45.2	60.7	n/a	48.4	n/a	24.0
WSA	62.3	87.4	54.6	73.3	n/a	57.3	n/a	28.5
OPD	70	90	60	80	n/a	60	n/a	30

Belt Drive								
	208/230-1 Ph-60hz		277-1 Ph-60hz		208/230-3 Ph-60hz		460-3 Ph-60hz	
Base Model Number	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E
	MC*24A	MC*36A	MC*24A	MC*36A	MC*24A	MC*36A	MC*24A	MC*36A
Cooling Only								
FLA	22.2	30.1	18.9	23.6	n/a	19.3	n/a	9.2
WSA	25.1	34.6	21.3	27.2	n/a	20.2	n/a	10.6
OPD	35	50	30	40	n/a	25	n/a	15
with Electric Reheat								
FLA	47.2	55.1	40.6	45.3	n/a	36.1	n/a	17.6
WSA	56.3	65.8	48.4	54.3	n/a	41.2	n/a	21.1
OPD	60	70	50	60	n/a	45	n/a	25
with SCR Reheat								
FLA	51.4	71.8	44.2	59.7	n/a	43.4	n/a	21.3
WSA	61.6	86.7	52.9	72.3	n/a	50.4	n/a	25.8
OPD	70	90	60	80	n/a	60	n/a	30
with Humidifier								
FLA	28.6	36.5	24.6	29.3	n/a	25.7	n/a	12.6
WSA	31.5	41.0	27.0	32.9	n/a	26.6	n/a	14.0
OPD	40	50	35	45	n/a	30	n/a	15
with Electric Reheat and Humidifier								
FLA	47.2	55.1	40.6	45.3	n/a	36.1	n/a	17.6
WSA	56.3	65.8	48.4	54.3	n/a	41.2	n/a	21.1
OPD	60	70	50	60	n/a	45	n/a	25
with SCR Reheat and Humidifier								
FLA	57.8	78.2	49.9	65.4	n/a	49.8	n/a	24.7
WSA	68.0	93.1	58.6	78.0	n/a	56.8	n/a	29.2
OPD	70	100	70	80	n/a	60	n/a	30

*specify disconnect or no disconnect

Notes:

1. Use MM*36E electrical data for MM*40C chilled water units
2. Use "no reheat" category for units with Hot Water Reheat
3. Belt drive data includes externally mounted high static blower box

Split System Air Cooled Electrical Data, 50 Hz with Single-Point Power Kit

Direct Drive				
	220/240-1 Ph-50hz		380/400-3 Ph-60hz	
Base Evaporator	MM*23E	MM*35E	MM*23E	MM*35E
Model Number	MC*23E	MC*35E	MC*23E	MC*35E
Cooling Only				
FLA	15.7	22.6	7.7	9.8
WSA	18.6	26.9	8.8	11.4
with Electric Reheat				
FLA	40.7	47.6	17.4	19.5
WSA	49.8	58.1	20.9	23.5
with SCR Reheat				
FLA	44.9	64.3	17.4	23.7
WSA	55.1	79.0	20.9	28.8
with Humidifier				
FLA	22.1	29.0	11.4	13.5
WSA	25.0	33.3	12.5	15.1
with Electric Reheat and Humidifier				
FLA	40.7	47.6	17.4	19.5
WSA	49.8	58.1	20.9	23.5
with SCR Reheat and Humidifier				
FLA	51.3	70.7	21.1	27.2
WSA	61.5	85.4	24.6	32.5

Belt Drive				
	220/220-1 Ph-50hz		380/400-3 Ph-60hz	
Base Model No.	MM*23E	MM*35E	MM*23E	MM*35E
Cooling Only				
FLA	21.7	28.6	8.1	10.2
WSA	24.6	32.9	9.2	11.8
with Electric Reheat				
FLA	46.7	53.6	17.8	19.9
WSA	55.8	64.1	21.3	23.9
with SCR Reheat				
FLA	50.9	70.3	17.8	24.1
WSA	61.1	85.0	21.3	29.2
with Humidifier				
FLA	28.1	35.0	11.8	13.9
WSA	31.0	39.3	12.9	15.5
with Electric Reheat and Humidifier				
FLA	46.7	53.6	17.8	19.9
WSA	55.8	64.1	21.3	23.9
with SCR Reheat and Humidifier				
FLA	57.3	76.7	21.5	27.8
WSA	67.5	91.4	25.0	32.9

*specify disconnect or no disconnect

Notes:

1. Use MM*35E electrical data for MM*39C chilled water units
2. Use "no reheat" category for units with Hot Water Reheat
3. Belt drive data includes externally mounted high static blower box

Split System Water/Glycol Cooled Electrical Data, 60 Hz with Single-Point Power Kit

Direct Drive								
	208/230-1 Ph-60hz		277-1 Ph-60hz		208/230-3 Ph-60hz		460-3 Ph-60hz	
Base Evaporator Model Number	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E
	MC*26W	MC*38W	MC*26W	MC*38W	MC*26W	MC*38W	MC*26W	MC*38W
Cooling Only								
FLA	14.2	20.7	11.9	16.6	n/a	14.2	n/a	7.1
WSA	17.1	25.2	14.3	20.2	n/a	17.1	n/a	8.5
OPD	25	40	20	30	n/a	25	n/a	15
with Electric Reheat								
FLA	39.2	45.7	33.6	38.3	n/a	31.0	n/a	15.5
WSA	48.3	56.4	41.4	47.3	n/a	38.1	n/a	19.0
OPD	50	60	45	50	n/a	45	n/a	20
with SCR Reheat								
FLA	43.4	62.4	37.2	52.7	n/a	38.3	n/a	19.2
WSA	53.6	77.3	45.9	65.3	n/a	47.2	n/a	23.7
OPD	60	80	50	70	n/a	50	n/a	25
with Humidifier								
FLA	20.6	27.1	17.6	22.3	n/a	20.6	n/a	10.5
WSA	23.5	31.6	20.0	25.9	n/a	23.5	n/a	11.9
OPD	30	45	25	40	n/a	30	n/a	15
with Electric Reheat and Humidifier								
FLA	39.2	45.7	33.6	38.3	n/a	31.0	n/a	15.5
WSA	48.3	56.4	41.4	47.3	n/a	38.1	n/a	19.0
OPD	50	60	45	50	n/a	45	n/a	20
with SCR Reheat and Humidifier								
FLA	49.8	68.8	42.9	58.4	n/a	44.7	n/a	22.6
WSA	60.0	83.7	51.6	71.0	n/a	53.6	n/a	27.1
OPD	60	90	60	80	n/a	60	n/a	30

Belt Drive								
	208/230-1 Ph-60hz		277-1 Ph-60hz		208/230-3 Ph-60hz		460-3 Ph-60hz	
Base Model Number	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E	MM*24E	MM*36E
	MC*26W	MC*38W	MC*26W	MC*38W	MC*26W	MC*38W	MC*26W	MC*38W
Cooling Only								
FLA	19.9	26.4	16.6	21.3	n/a	15.6	n/a	7.8
WSA	22.8	30.9	19.0	24.9	n/a	18.5	n/a	9.2
OPD	30	45	25	35	n/a	25	n/a	15
with Electric Reheat								
FLA	44.9	51.4	38.3	43.0	n/a	32.4	n/a	16.2
WSA	54	62.1	46.1	52.0	n/a	39.5	n/a	19.7
OPD	60	70	50	60	n/a	45	n/a	20
with SCR Reheat								
FLA	49.1	68.1	41.9	57.4	n/a	39.7	n/a	19.9
WSA	59.3	83.0	50.6	70.0	n/a	48.6	n/a	24.4
OPD	60	90	60	80	n/a	50	n/a	25
with Humidifier								
FLA	26.3	32.8	22.3	27.0	n/a	22.0	n/a	11.2
WSA	29.2	37.3	24.7	30.6	n/a	24.9	n/a	12.6
OPD	40	50	30	40	n/a	35	n/a	15
with Electric Reheat and Humidifier								
FLA	44.9	51.4	38.3	43.0	n/a	32.4	n/a	16.2
WSA	54.0	62.1	46.1	52.0	n/a	39.5	n/a	19.7
OPD	60	70	50	60	n/a	45	n/a	20
with SCR Reheat and Humidifier								
FLA	55.5	74.5	47.6	63.1	n/a	46.1	n/a	23.3
WSA	65.7	89.4	56.3	75.7	n/a	55.0	n/a	27.8
OPD	70	90	60	80	n/a	60	n/a	30

*specify disconnect or no disconnect

Notes:

1. Use MM*36E electrical data for MM*40C chilled water units
2. Use "no reheat" category for units with Hot Water Reheat
3. Belt drive data includes externally mounted high static blower box

Split System Water/Glycol Cooled Electrical Data, 50 Hz with Single-Point Power Kit

Direct Drive				
	220/240-1 Ph-50hz		380/400-3 Ph-60hz	
Base Evaporator Model Number	MM*23E MC*25W	MM*35E MC*37W	MM*23E MC*25W	MM*35E MC*37W
Cooling Only				
FLA	13.9	19.6	6.0	8.1
WSA	16.8	23.9	7.1	9.7
with Electric Reheat				
FLA	38.9	44.6	15.7	17.8
WSA	48.0	55.1	19.2	21.8
with SCR Reheat				
FLA	43.1	61.3	15.7	22.0
WSA	53.3	76.0	19.2	27.1
with Humidifier				
FLA	20.3	26.0	9.7	11.8
WSA	32.2	30.3	10.8	13.4
with Electric Reheat and Humidifier				
FLA	38.9	44.6	15.7	17.8
WSA	48.0	55.1	19.2	21.8
with SCR Reheat and Humidifier				
FLA	49.5	67.7	19.4	25.7
WSA	59.7	82.4	22.9	30.8

Belt Drive				
	220/220-1-50hz		380/400-3-60	
Base Model No.	MM*23E MC*25W	MM*35E MC*37W	MM*23E MC*25W	MM*35E MC*37W
Cooling Only				
FLA	19.9	25.6	6.4	8.5
WSA	22.8	29.9	7.5	10.1
with Electric Reheat				
FLA	44.9	50.6	16.1	18.2
WSA	54.0	61.1	19.6	22.2
with SCR Reheat				
FLA	49.1	67.3	16.1	22.4
WSA	59.3	82.0	19.6	27.5
with Humidifier				
FLA	26.3	32.0	10.1	12.2
WSA	29.2	36.3	11.2	13.8
with Electric Reheat and Humidifier				
FLA	44.9	50.6	16.1	18.2
WSA	54.0	61.1	19.6	22.2
with SCR Reheat and Humidifier				
FLA	55.5	73.7	19.8	22.4
WSA	65.7	88.4	23.3	27.5

*specify disconnect or no disconnect

Notes:

1. Use MM*35E electrical data for MM*39C chilled water units
2. Use "no reheat" category for units with Hot Water Reheat
3. Belt drive data includes externally mounted high static blower box

Indoor Condensing Unit Electrical Data, 60 Hz

MODEL	208/230-1 Ph-60hz	277-1 Ph-60hz	208/230-3 Ph-60hz	460-3 Ph-60hz
MC*24A				
FLA	13.7	11.9	n/a	n/a
WSA	16.6	14.3	n/a	n/a
OPD	25	20	n/a	n/a
MC*36A				
FLA	21.6	16.6	15.1	7.1
WSA	26.1	20.2	18.0	8.5
OPD	40	30	25	15
MC*26W				
FLA	11.4	9.6	n/a	n/a
WSA	14.3	12.0	n/a	n/a
OPD	25	20	n/a	n/a
MC*38W				
FLA	17.9	14.3	11.4	5.7
WSA	22.4	17.9	14.3	7.1
OPD	40	30	25	15

Outdoor Condensing Units

Electrical Data 60Hz 95°F (35°C) Ambient			
		PFC027A_L PFH027A_L	PFC037A_L PFH037A_L
208/230-1-60	FLA	12.8	19.3
	WSA	15.7	23.8
	OPD	25.0	40.0
208/230-3-60	FLA	n/a	12.8
	WSA	n/a	15.7
	OPD	n/a	25.0
575-3-60	FLA	n/a	5.9
	WSA	n/a	7.1
	OPD	n/a	15.0

Electrical Data 60Hz 105°F (40°C) Ambient			
		PFC027A_H PFH0270A_H	PFC037A_H PFH037A_H
208/230-1-60	FLA	14.8	21.3
	WSA	17.7	25.8
	OPD	25.0	40.0
208/230-3-60	FLA	n/a	14.8
	WSA	n/a	17.7
	OPD	n/a	25.0

Electrical Data 60Hz Quiet Line			
		PFCZ27A_L	PFCZ37A_L
208/230-1-60	FLA	12.6	19.1
	WSA	15.5	23.6
	OPD	25.0	40.0
208/230-3-60	FLA	n/a	12.8
	WSA	n/a	15.7
	OPD	n/a	25.0
575-3-60	FLA	n/a	5.9
	WSA	n/a	7.1
	OPD	n/a	15.0

Electrical Data 50Hz 95°F (35°C) Ambient			
		PFC026A_L	PFC036A_L
220/240-1-50	FLA	12.7	18.4
	WSA	15.6	22.7
	OPD	25.0	40.0
200/230-3-50	FLA	n/a	15.2
	WSA	n/a	18.7
	OPD	n/a	30.0
380/415-3-50	FLA	4.9	7.0
	WSA	6.0	8.6
	OPD	15.0	15.0

Electrical Data 50Hz 105°F (40°C) Ambient			
		PFC026A_H	PFC036A_H
220/240-1-50	FLA	12.7	20.7
	WSA	15.6	25.0
	OPD	25.0	40.0
200/230-3-50	FLA	n/a	17.5
	WSA	n/a	21.0
	OPD	n/a	35.0
380/415-3-50	FLA	6.0	8.1
	WSA	7.1	9.7
	OPD	15.0	15.0

Electrical Data 50Hz Quiet Line			
		PFCZ26A_L	PFCZ36A_L
220/240-1-50	FLA	12.6	18.3
	WSA	15.5	22.6
	OPD	25.0	40.0
200/230-3-50	FLA	n/a	15.1
	WSA	n/a	18.6
	OPD	n/a	30.0
380/415-3-50	FLA	4.9	7.0
	WSA	6.0	8.6
	OPD	15.0	15.0

FLA - Full Amp Loads
WSA - Wire Size Amps (minimum supply circuit current capacity)
OPD - Over Current Protection Device (fuse or circuit breaker)

WSA and OPD are based on United States National Electrical Code.
Provide wiring and protection in accordance with local electrical codes.

Indoor Condensing Unit Electrical Data, 50 Hz

MODEL	220/240-1 Ph-50hz	380/400-3 Ph-50hz
MC*23A		
FLA	13.2	6.0
WSA	16.1	7.1
MC*35A		
FLA	20.1	8.1
WSA	24.4	9.7
MC*25W		
FLA	11.4	4.3
WSA	14.3	5.4
MC*37W		
FLA	17.1	6.4
WSA	21.4	8.0

Refrigerant Charge (Unit only)

Evaporators	oz.
MM*23E	7
MM*24E	7
MM*35E	7
MM*36E	7
Condensing Units	
MC*23A	134
MC*24A	134
MC*35A	213
MC*36A	213
MC*25W	41
MC*26W	41
MC*37W	54
MC*38W	54

Unit Weights

Evaporators	lbs.	kg
MM*23E	225	102
MM*24E	225	102
MM*35E	225	102
MM*36E	225	102
MM*39C	230	104
MM*40C	230	104
Condensing Units		
MC*23A	230	104
MC*24A	230	104
MC*35A	240	109
MC*36A	240	109
MC*25W	175	79
MC*26W	175	79
MC*37W	190	86
MC*38W	190	86

*specify disconnect or no disconnect

MULTIPLE UNIT DRYCOOLER SELECTION CHART

	QTY	FLOW GPM (l/m)	95°F (35°C) AMBIENT DRY-COOLER MODEL	95°F (35°C) AMBIENT PRESS DROP FT. (kPa)	100°F (37.8°C) AMBIENT DRY-COOLER MODEL	100°F (37.8°C) AMBIENT PRESS DROP FT. (kPa)	105°F (40.6°C) AMBIENT DRY-COOLER MODEL	105°F (40.6°C) AMBIENT PRESS DROP FT. (kPa)
MC*23G	1	9 (34)	DSF033	8 (23)	DSF069_4	14 (42)	DSF092_6	7 (21)
	2	18 (68)	DSF069	7 (22)	DSF109_8	14 (42)	DSO174	3 (8)
	3	27 (102)	DSF109	4 (13)	DSO174	6 (16)	DSO225_16	9 (27)
	4	36 (136)	DSO139	6 (19)	DSO174	9 (28)	DSO310_16	17 (50)
	6	54 (204)	DSO197_32	4 (11)	DSO260	8 (25)	DSO466_26	14 (42)
MC*35G	1	12 (45)	DSF069	4 (12)	DSF092_6	12 (35)	DSO139_8	6 (19)
	2	24 (91)	DSF109	4 (11)	DSO139_8	20 (60)	DSO225_16	8 (22)
	3	36 (136)	DSO174	9 (27)	DSO197	12 (36)	DSO310_16	17 (50)
	4	48 (182)	DSO197_32	3 (9)	DSO260	7 (20)	DSO419	5 (16)
	6	72 (273)	DSO310	9 (25)	DSO419	11 (32)	DSO620_32	16 (49)

GUIDE SPECIFICATIONS — 2-ton and 3-ton Systems

1.0 GENERAL

1.1. Summary

These specifications describe requirements for an environmental control system. The system shall be designed to control temperature and relative humidity conditions within the room.

The manufacturer shall design and furnish all equipment in the quantities and configurations shown on the project drawings.

System shall be supplied with ETL and CSA (NRTL) listing according to UL 1995.

The system model number shall be _____.

1.2 Design Requirements

The environmental control system shall be a Liebert Mini-Mate2 factory assembled unit. On direct expansion models, the refrigeration system shall be split, with the compressor located in a remote or close-coupled condensing unit.

The evaporator section shall be designed to be installed above dropped-ceiling installation. Condensing units shall be designed for either outdoor or above-dropped-ceiling installation.

The system shall have a total cooling capacity of _____ BTU/hr (kW), and a sensible cooling capacity of _____ BTU/hr (kW), based on the entering air condition of _____°F (°C) dry bulb, and _____°F (°C) wet bulb.

The unit is to be supplied with _____ volt, ____ phase, _____ Hz power supply.

1.3 Submittals

Submittals shall be provided with the proposal and shall include: Single-Line Diagrams; Dimensional, Electrical, and Capacity data; Piping and Electrical Connection Drawings.

1.4 Quality Assurance

The specified system shall be factory tested before shipment. Testing shall include, but shall not be limited to: Quality Control Checks, "HiPot" Test (two times rated voltage plus 1000 volts, per NRTL agency requirements), and Metering Calibration Tests. The system shall be designed and manufactured according to world class quality standards. The manufacturer shall be ISO 9001 certified.

2.0 PRODUCT

2.1 Standard Features/ All Systems

2.1.1 Evaporator Cabinet Construction

The cabinet and chassis shall be constructed of heavy gauge galvanized steel, and shall be serviceable from one side only. Mounting brackets shall be factory attached to the cabinet.

2.1.2 Air Distribution

The air distribution system shall be constructed with a quiet, direct-drive fan assembly equipped with double-inlet blower, self-aligning ball bearings, and lifetime lubrication. Fan motor shall be permanent-split capacitor, high efficiency type, equipped with two speeds for air flow modulation. Dehumidification shall utilize the lower fan speed.

Each system shall be capable of delivering ____CFM (____ CMH) at high fan speed. The circulating-air fan shall be two speed for precise dehumidification control. The fan motor shall be ____ HP (____ W).

System shall be suitable for plenum or ducted air distribution. Refer to 2.5.3 and 2.5.4.

2.1.3 Microprocessor Control

The control system shall be microprocessor based. The wall-mounted control enclosure shall include a 2-line by 16 character LCD display providing continuous display of operating status and alarm condition. An 8-key membrane keypad for setpoint/ program control, unit on/off, and fan speed shall be located below the display.

Temperature and humidity sensors shall be located in the wallbox which shall be capable of being located up to 300 ft. (91.4m) from the evaporator unit, via field supplied and wired thermostat-type wire.

2.1.3.1 Monitoring

The LCD display shall provide an on/off indication, fan speed indication, operating mode indication (cooling, heating, humidifying, dehumidifying) and current day, time, temperature and humidity (if applicable) indication. The monitoring system shall be capable of relaying unit operating parameters and alarms to the Liebert SiteScan® monitoring system.

2.1.3.2 Control Setpoint Parameters

- Temp. Setpoint 65-85°F (18 to 29°C)
- Temp. Sensitivity 1 to 5°F (1 to 3°C)
- Humidity Setpoint 20-80% RH
- Humidity Sensitivity 1 to 10% RH

2.1.3.3 Unit Controls

2.1.3.3.1 Compressor Short-Cycle Control

The control system shall prevent compressor short-cycling by a 3 minute timer from compressor stop to the next start.

2.1.3.3.2 Common Alarm and Remote On/Off

A common alarm relay shall provide a contact closure to a remote alarm device. Two (2) terminals shall also

be provided for remote on/off control. Individual alarms shall be "enabled" or "disabled" from reporting to the common alarm.

2.1.3.3.3 Setback Control
The control shall be programmable on a daily basis or on a 5 day/2 day program schedule. It shall be capable of accepting 2 programs per day.

2.1.3.3.4 Temperature Calibration
The control shall include the capabilities to calibrate the temperature and humidity sensors and adjust the sensor response delay time from 1 to 90 seconds. The control shall be capable of displaying temperature values in °F or °C.

2.1.3.3.5 System Auto Restart
For start-up after power failure, the system shall provide automatic restart with a programmable (up to 9.9 minutes in 6-second increments) time delay. Programming can be performed either at the unit or from the central site monitoring system.

2.1.4 Alarms

2.1.4.1 Unit Alarm
The control system shall monitor unit operation and activate an audible and visual alarm in the event of the following factory preset alarm conditions:

- High Temperature
- Low Temperature
- High Humidity
- Low Humidity
- High Water Alarm - Lockout Unit Operation
- High Head Pressure
- Loss of Power
- Compressor Short Cycle

2.1.4.2 Custom Alarms (2x)

- Humidifier Problem
- Filter Clog
- Water Detected
- Smoke Detected

User customized text can be entered for the two (2) custom alarms.

2.1.4.3 Alarm Controls
Each alarm (unit and custom) shall be separately enabled or disabled, selected to activate the common alarm (except for high head pressure).

2.1.4.4 Audible Alarm
The audible alarm shall annunciate any alarm that is enabled by the operator.

2.1.4.5 Common Alarm
A programmable common alarm shall be provided to interface user selected alarms with a remote alarm device.

2.1.4.6 Remote Monitoring
All alarms shall be communicated to the Liebert site monitoring system with the following information: date and time of occurrence, unit number, and preset temperature and humidity.

2.2 Direct Expansion System Evaporator Components

2.2.1 Direct Expansion Coil
The evaporator section shall include evaporator coil, thermostatic expansion valve, and filter drier.

The evaporator coil shall have 3.1 sq. ft. (0.28 sq.m) face area, 3 rows deep. It shall be constructed of copper tubes and aluminum fins and have a maximum face velocity of ___ ft. per minute (m/s) at ___ CFM (CMH). The coil shall be provided with a stainless steel drain pan. Refrigerant flow shall be controlled by an externally equalized thermostatic expansion valve.

2.2 Chilled Water System Components

2.2.1 Chilled Water Control Valve
The control solenoid valve shall be motorized slow-acting type to reduce water hammer. Design pressure shall be 300 psig (2067 kPa) static pressure, with a maximum close-off pressure of ____ psi (kPa).

2.2.2 Chilled Water Coil
The cooling coil shall have a minimum of 3.1 sq.ft. (0.28 sq.m) face area, 3 rows deep. It shall be constructed of copper tubes and aluminum fins and have a maximum face velocity of ____ ft. per minute (m/s) at ____ CFM (CMH). The coil shall be supplied with 45°F (7.2°C) entering water temperature. The coil shall be supplied with _____ GPM (l/s) of chilled water and the pressure drop shall not exceed _____ PSI (kPa). The coil assembly shall be mounted in a stainless steel condensate drain pan.

2.3 Air-Cooled Centrifugal Fan Condensing Unit
The condenser coil shall be constructed of copper tubes and aluminum fins. The condensing unit shall be factory charged with refrigerant, sealed, and shall be capable of being connected to the evaporator section directly. The condensing unit can be mounted directly to the evaporator or can be mounted remote to the evaporator.

The condensing unit shall be designed for 95°F (35°C) ambient and be capable of operation to -20°F (-29°C) ambient. The fan motor assembly shall be direct drive.

The condenser fan shall be designed for ____CFM (CMH) at ____" (mm) external static pressure.

(Option) A hot gas bypass circuit shall be provided to ensure operation under low load conditions.

2.3 Air-Cooled Prop Fan Condensing Unit
The condenser coil shall be constructed of copper tubes and aluminum fins with a direct-drive

propeller-type fan, and shall include a scroll compressor, high pressure switch, and lee-temp receiver. All components shall be factory assembled, charged with refrigerant, sealed, and be capable of being connected to the evaporator section using pre-charged refrigerant line sets. No internal piping, brazing, dehydration, or charging shall be required. Condensing unit shall be designed for 95°F (35°C) ambient and be capable of operation to -30°F (-34.4°C).

(Option) The condensing unit shall be designed to operate at a sound level less then 58 dba.

(Option) A hot gas bypass circuit shall be provided to ensure operation under low load conditions.

2.3 Water/Glycol Cooled Condensing Unit

The condensing unit shall include a scroll compressor, coaxial condenser, and high-pressure switch.

The water/glycol condensing unit shall be equipped with a coaxial condenser having a total system pressure drop of _____ ft. of water (kPa) and a flow rate of _____ GPM (l/s) with _____ °F (°C) entering water/glycol temperature. The condenser circuit shall be pre-piped with a [(2-way) (3-way)] regulating valve which is head-pressure actuated.

The condenser water/glycol circuit shall be designed for a pressure of [(150 PSI (1034 kPa)) (350 PSI (2413 kPa))].

(Option) A hot gas bypass circuit shall be provided to ensure operation under low load conditions.

2.4 Factory Installed Options

2.4.1 Steam Generating Humidifier

The environmental control system shall be equipped with a steam generating humidifier that is controlled by the microprocessor control system. It shall be complete with disposable canister, all supply and drain valves, steam distributor, and electronic controls. The need to change canister shall be annunciated on the microprocessor wallbox control panel. The humidifier shall have a capacity of _____ lbs./hr. (kg/h). An LED light on the humidifier assembly shall indicate cylinder full, over-current detection, fill system fault, and end of cylinder life conditions.

2.4.2 Electric Reheat

The electric reheat shall be low-watt density, 304/304 stainless steel, finned-tubular and shall be capable of maintaining room dry bulb conditions when the system is calling for dehumidification. The reheat section shall include a U.L. approved safety switch to protect the system from overheating. The capacity of the reheat coils shall be _____ BTU/HR (kW), with input power of _____ kW, controlled in one stage.

2.4.3 Hot Water Reheat

The hot water reheat coil shall have copper tubes and aluminum fins with a capacity of _____ BTU/HR (kW) when supplied with _____°F (°C) entering water temperature at _____ GPM (l/s) flow rate. Maximum pressure drop shall be _____ PSI (kPa). The control system shall be factory prepiped with a 2way solenoid valve and cleanable Y-strainer.

2.4.4 SCR Electric Reheat

The electric reheat shall be low-watt density, 304/304 stainless steel, finned-tubular and shall be capable of maintaining room dry bulb conditions when the system is calling for dehumidification. The reheat section shall include a U.L. approved safety switch to protect the system from overheating.

The SCR (Silicon Controlled Rectifier) controller shall proportionally control the reheat elements to maintain the selected room temperature. The rapid cycling made possible by the SCR controller provides precise temperature control, and the more constant element temperature improves heater life. The unit microprocessor control shall operate the SCR controller, while cooling is locked on. The capacity of the reheat coils shall be _____ BTU/HR (kW), with input power of _____ kW.

2.4.5 Disconnect Switch, Non-Locking

The non-automatic, non-locking, molded case circuit breaker shall be factory mounted in the high voltage section of the electrical panel. The switch shall be accessible from the front of the unit.

2.4.6 Firestat

The firestat shall immediately shut down the system when high temperatures are detected. The firestat shall be mounted with the sensing element in the return air.

2.4.7 Smoke Detector

The smoke detector shall immediately shut down the environmental control system and activate the alarm system when activated. The sensing element shall be located in the return air compartment.

2.4.8 Free-Cooling/ Dual Cooling Source

A free-cooling coil shall be integral to the evaporator cabinet, and shall be constructed of copper tubes and aluminum fins. The coil shall be rated at _____ BTU/HR (kW) sensible cooling capacity with a 45°F (22°C), ___% glycol solution. The coil shall require _____ GPM (l/s) and the total unit pressure drop shall not exceed _____ feet of water (kPa) when in the free cooling mode. Free-cooling shall be activated by an aquastat, and shall include factory piped three-way solenoid valve and separate supply and return piping.

2.5 Ship-Loose Accessories

2.5.1 Remote Sensors
The unit shall be supplied with remote temperature and humidity sensors. The sensors shall be connected to the unit by a _____ ft. (m) shielded cable.

2.5.2 Air Distribution Plenum
The evaporator section shall be supplied with an air distribution plenum with integral filter. The plenum shall be 2' x 4' (610 mm x 1219 mm) in size and shall provide 4-way air distribution, for installation into a standard 2' x 4' (610 mm x 1219 mm) ceiling grid. Filter size shall be 4" (102 mm), deep pleated type with minimum efficiency of 20%, based on ASHRAE 52-76.

2.5.3 High Static Blower Assembly
A blower box shall be field attached to the evaporator to provide up to 2.0" (51mm) of external static pressure on the discharge side of the evaporator. The blower box shall contain a centrifugal type, double inlet blower, with belt drive and single speed motor, mounted to
an adjustable motor base.

2.5.4 Air Filter Box
The evaporator section shall be supplied with an air filter box for use with ducted installations. The filter shall be 4" (102 mm) deep, pleated type, with a minimum efficiency of 20%, based on ASHRAE 52-76.

2.5.5 Condensate Pump
The condensate pump shall have the minimum capacity of 30 GPH (114 l/h) at 20 ft. head (60 kPa). It shall be complete with integral float switch, pump, motor assembly, and reservoir.

2.5.6 Refrigerant Line Sets
Pre-charged refrigerant line sets shall be provided by Liebert in proper lengths for application. Line set length shall be _____ feet (m).

2.5.7 Refrigerant Line Sweat Adapter Kit
Provide a sweat adapter kit to permit field brazing of refrigerant line connections.

2.5.8 Single Point Power Kit
A Single Point Power Kit shall be provided for a close-coupled system to allow a single electrical feed to supply power to both the evaporator and condensing unit.

2.5.9 Liebert SiteScan® Site Monitoring System
A Liebert SiteScan Site Monitoring System Model _____ shall be provided for remote monitoring of the Mini-Mate2 unit and monitoring of other Liebert support equipment. The SiteScan shall have the capability to monitor and change (at the user direction) the temperature and humidity setpoints and sensitivities of each unit. The printer shall provide the user with chronological alarm information. It shall also be capable of being programmed to print out environmental conditions or operating modes at each unit.

Drycooler
The Liebert manufactured drycooler shall be the low-profile, slow speed, multiple direct drive propeller fan type. The drycooler shall be constructed of aluminum and contain a copper type, aluminum fin coil with an integral electric control panel. The drycooler shall be designed for _____°F (°C) ambient.

Glycol Pump Package
The system shall include a centrifugal pump mounted in a weatherproof and vented enclosure. The pump shall be rated for ____ gpm (l/s) at ____ ft. (kPa) of head, and operate on ____ volt, 1 phase, ____ Hz.

3.0 EXECUTION

3.1 Installation of Air Conditioning Unit

3.1.1 General
Install air conditioning unit in accordance with manufacturer's installation instructions. Install unit plumb and level, firmly anchored in location indicated, and maintain manufacturer's recommended clearances.

3.1.2 Electrical Wiring
Install and connect electrical devices furnished by manufacturer but not specified to be factory mounted. Furnish copy of manufacturer's electrical connection diagram submittal to electrical contractor.

3.1.3 Piping Connections
Install and connect devices furnished by manufacturer but not specified to be factory mounted. Furnish copy of manufacturer's piping connection diagram submittal to piping contractor.

3.1.4 Supply and Drain Water Piping
Connect water supply and drains to air conditioning unit. Unit drain shall be trapped internally.

3.2 Field Quality Control
Start up air conditioning unit in accordance with manufacturer's start up instructions. Test controls and demonstrate compliance with requirements.

NOTE: These Guide Specifications comply with the outlines of the Construction Specifications Institute per CSI MP-2-1 and MP-2-2.

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